TIAGO DE MELO CARTAXO

FROM ENVIRONMENTAL RIGHTS TO RESILIENCE JUSTICE: HOW PUBLIC LAW CAN FACE SOCIAL-ECOLOGICAL UNCERTAINTY IN CITIES

Thesis for the PhD Degree in Law,
with specialisation in Public Law

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This dissertation is submitted for discussion under the scope of the PhD Programme in Law, at the NOVA School of Law, Universidade Nova de Lisboa, with a Doctoral grant from Fundação para a Ciência e a Tecnologia, I.P. (FCT), under the supervision of Professor Dr. Helena Pereira de Melo, after a visiting research at the School of Law and the Environmental Regulatory Research Group of the University of Surrey, under the supervision of Professor Rosalind Malcolm, and a Fulbright visiting scholarship with the support of FCT at the Louis D. Brandeis School of Law and the Centre for Land Use and Environmental Responsibility of the University of Louisville, under the supervision of Professor Craig Anthony Arnold, who is also Co-Supervisor of this dissertation.

Universidade Nova de Lisboa, February 2020

ANTI-PLAGIARISM STATEMENT

In accordance with Article 8 of the Regulation for the 3rd Cycle, I declare under oath that the dissertation hereby submitted is original and all quotations and references are duly and correctly identified. I also acknowledge that the use of extraneous elements not identified constitutes a serious ethical and disciplinary fault.

Lisbon, 14 February, 2020

Tiago Vale Lopes de Melo Sousa Martins Cartaxo

In memory of my father.

"Pour ce qui est de l'avenir, il ne s'agit pas de le prévoir, mais de le rendre possible."

Antoine de Saint-Exupéry, *Citadelle*, 1948

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Citation style and other conventions

All citations and references to other authors which are part of this dissertation are identified in accordance with the following style:

Material Type	Notes/Bibliography Style
A book in print	Note Style: Author's Full Name, *Book's Title* (Location: Publisher, Year), Page. Duplicate Note: Author's Surname, *Abbreviated Title* (Year), Page. Bibliography: Author's Surname, Author's Name. *Book's Title* (Location: Publisher, Year).
An article in a print journal	Note Style: Author's Full Name, "Article's Title," *Journal's Title*, Volume, Number/Issue (Year), Page. Duplicate Note: Author's Surname, "Abbreviated Title" (Year), Page. Bibliography: Author's Surname, Author's Name. "Article's Title," *Journal's Title*, Volume, Number/Issue (Year), Page.
An article in an electronic journal	Note Style: Author's Full Name, "Article's Title," *Journal's Title*, Volume, Number/Issue (Year), Page <URL> (accessed on Date). Duplicate Note: Author's Surname, "Abbreviated Title" (Year), 452–53. Bibliography: Author's Surname, Author's Name. "Article's Title", *Journal's Title*, Volume, Number/Issue (Year), Page <URL> (accessed on Date).
A website	Note Style: "Website's Name" <URL> (accessed on Date). Duplicate Note: "Website's Name." Bibliography: Name. "Website's Name" <URL> (accessed on Date).

The language used in this dissertation is English in its British form, unless in cases of quotes from sources and references originally written in other forms, such as American English.

Abbreviations

ACHPR	African Charter on Human and Peoples' Rights
ACHR	American Convention on Human Rights
CA	California
CAA	Clean Air Act
CCAC	Climate and Clean Air Coalition
CCCI	Cities and Climate Change Initiative
CCPI	Climate Change Performance Index
CFC	Chlorofluorocarbons
CFREU	Charter of Fundamental Rights of the European Union
CJEU	Court of Justice of the European Union
CLUER	University of Louisville Centre for Land Use and Environmental Responsibility
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO_2	Carbon dioxide
COP	Conference of parties
CWA	Clean Water Act
EC	European Commission
ECHR	European Convention on Human Rights
ECtHR	European Court of Human Rights
EIA	Environmental Impact Assessment
EP	Environmental performance
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
EU	European Union
FAC	Florida Administrative Code

FDEP	Florida Department of Environmental Protection
FL	Florida
FOIA	Freedom of Information Act
GDP	Gross domestic product
GNP	Gross national product
GHG	Greenhouse gas
GIS	Geographic information systems
IACHR	Inter-American Commission on Human Rights
IACtHR	Inter-American Court of Human Rights
ICT	Information and communication technologies
IE	Industrial emissions
INC	Intergovernmental Negotiating Committee
INSPIRE	Infrastructure for Spatial Information in the European Community
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
MA	Massachusetts
MDG	Millennium Development Goal
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NDTC	National Development and Territorial Development Concept
NGO	Non-governmental organisation
NO_2	Nitrogen dioxide
NSDS	National Framework Strategy on Sustainable Development of Hungary
OAS	Organization of American States
OECD	Organisation for Economic Co-operation and Development
OKIR	National Information System on the Environment
OR	Oregon

PennAPCA	Pennsylvania Air Pollution Control Act
PDEP	Pennsylvania Department of Environmental Protection
RCW	Revised Code of Washington
SEA	Strategic Environmental Assessment
SDG	Sustainable Development Goal
SO_2	Sulphur dioxide
TEU	Treaty on European Union
TFEU	Treaty on the Functioning of the European Union
UDHR	Universal Declaration of Human Rights
UK	United Kingdom
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UN-Habitat	United Nations Human Settlements Programme
UNHHSF	United Nations Habitat and Human Settlements Foundation
US	United States
VOC	Volatile organic compound
WAC	Washington Administrative Code
WCED	World Commission on Environment and Development
WDE	Washington State Department of Ecology
WG	Working group
WHO	World Health Organization
WSEPA	State Environmental Policy Act
WUP	World Urbanisation Prospects

Abstract

Climate change is one of the biggest challenges for today's Environmental Law. With this reality, the rapid growth of cities, where most of the world's population lives, has resulted in the creation of more inequalities among their populations. The complexity of different social and ecological systems, growing environmental instability, and climate uncertainty urge for a need to find solutions for a more resilient future. Facing this background, Public Law has the opportunity to play a catalyst role in improving the environmental quality and life of urban communities. Nevertheless, environmental rights enshrined in most constitutions do not demonstrate to be sufficient for an effective protection of socio-ecological systems and for the promotion of their resilience. Thus, departing from the complex reality of the cities and intending to address existing vulnerabilities, this study aims to suggest the implementation of new legal frameworks that, through more adaptive mechanisms of law, allow the realisation of justice for socio-ecological resilience.

Resumo (in Portuguese)

As alterações climáticas representam um dos maiores desafios atuais para o Direito do Ambiente. Concomitantemente a esta realidade, o rápido crescimento das cidades, que albergam a maioria da população mundial, tem vindo a resultar na criação de mais desigualdades entre as suas populações. A complexidade dos diferentes sistemas sociais e ecológicos, a crescente instabilidade ambiental e a incerteza climática concorrem para uma necessidade premente em encontrar soluções para um futuro mais resiliente. Perante esta realidade, o Direito Público tem a oportunidade de desempenhar um papel de catalisador para a melhoria da qualidade ambiental e da vida das comunidades urbanas. No entanto, os Direitos Ambientais consagrados na maioria das constituições não se afiguram como suficientes para uma efetiva proteção dos sistemas socio-ecológicos, bem como para a promoção da respetiva resiliência. Deste modo, partindo da complexa realidade das cidades e procurando combater as vulnerabilidades nelas existentes, este estudo pretende sugerir a implementação de novos quadros jurídicos que, através de mecanismos mais adaptáveis de direito, permitam a efetivação de uma justiça para a resiliência socio-ecológica.

The body of this dissertation occupies a total number of 832.193 characters, including spaces and footnotes.

Chapter I – Introduction, research questions and methodology

1. Background

The need of states and their public administrations or institutions to find ways and solutions that can ensure general sustainability, and more recently social-ecological resilience[1], has been increasing along the last decades. Both public and private activities have been developing in a more ecological way, or at least trying not to compromise the environment and ecosystems as much as possible.[2]

The global trend has been, therefore, to implement the best measures for an efficient use of the natural resources that are available on the surface of the Earth.[3] It is a challenge for the human communities and their institutions to organise the access to common resources[4] and find solutions to live within the limits or boundaries of our planet.[5] Simultaneously, the protection of the rights (both

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[11] On the substitution of the "sustainability narrative" for the "resilience narrative," see Melinda Harm Benson and Robin Kundis Craig, *The End of Sustainability: Resilience and the Future of Environmental Governance in the Anthropocene* (Lawrence, KA: University Press of Kansas, 2017).

[2] About the theme of "ecology," see Richard Karban, Mikaela Huntzinger, and Ian S. Pearse, *How to Do Ecology: A Concise Handbook*, Second edition (Princeton: Princeton University Press, 2014); François Ost, *A natureza à margem da lei. A ecologia à prova do direito*, (Lisboa: Instituto Piaget, 1997), 104. [Portuguese translation of *La Nature Hors la Loi: L'écologie à l'épreuve du droit*, Série Écologie et Société, (Paris: Éditions La Découverte, 1995)]; and Michel Cuisin, *O que é a ecologia?* (Lisboa: Livros Horizonte, 1981), 10. [Portuguese translation of *Qu'est-ce que l'écologie?* (Paris-Montréal: Bordas, 1971)]. On the intersections of ecology with other areas, see Stuart K. Allison, and Stephen D. Murphy, *Routledge Handbook of Ecological and Environmental Restoration* (Abingdon: Routledge, 2017); Tom Perreault, Gavin Bridge, and James McCarthy (eds.), *Routledge Handbook of Political Ecology* (Abingdon: Routledge, 2015); Robert Costanza, John H. Cumberland, Herman Daly, Robert Goodland, Richard B. Norgaard, Ida Kubiszewski, and Carol Franco, *An Introduction to Ecological Economics*, Second Edition (Boca Raton: CRC Press, 2015); Richard T. T. Forman, *Urban Ecology: Science of Cities* (Cambridge: Cambridge University Press, 2014); and Larry L. Rockwood, *Introduction to Population Ecology*, 2nd edition (Chichester: Wiley Blackwell, 2006).

[3] Respecting the principle of high level of environmental protection in the human economic activities. On this issue, see Maria Alexandra de Sousa Aragão, *O princípio do nível elevado de protecção e a renovação ecológica do direito do ambiente e dos resíduos* (Coimbra: Almedina, 2006), 696.

[4] Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press, 1999), 23.

[5] Will Steffen et al, "Planetary boundaries: Guiding human development on a changing planet," *Science*, Vol. 347, Issue 6223 (13 February 2015), 1259855

individual or collective) and the well-being of the communities who live in different territories is a priority of our time.[6] Because ecology is, in fact, a synthesising science of both humankind and the nature.[7]

This synthesis leads our attention to the reality of cities, which importance has been increasing, namely in the last decades. And, as growing places, cities pose many of the most significant governance problems to the world in the 21st century.

Although today's cities face a large number of problems, there are three major concerns regarding urban environments that deserve a special attention. Therefore, the following concerns should be mentioned:

a) Urban environments are increasing complex social-ecological systems, in which built and natural subsystems are interconnected and which are also under stress;[8]

<https://science.sciencemag.org/content/347/6223/1259855.full> (accessed on 2019.12.22); Johan Rockström et al, "Research Planetary Boundaries: Exploring the Safe Operating Space for Humanity," *Ecology and Society*, Vol. 14, Issue 2 (2009), 32 <http://www.ecologyandsociety.org/vol14/iss2/art32/> (accessed on 2019.12.22); Jorgen Randers, Johan Rockström, Per-Espen Stoknes, Ulrich Goluke, David Collste, Sarah E. Cornell, and Jonathan Donges, "Achieving the 17 Sustainable Development Goals within 9 planetary boundaries," *Global Sustainability*, Vol. 2, e24 (2019) 1-11 <https://www.cambridge.org/core/services/aop-cambridge-core/content/view/5934F82F471B751168A0B2AE59AD0319/S205947981900022Xa.pdf/achieving_the_17_sustainable_development_goals_within_9_planetary_boundaries.pdf> (accessed on 2019.12.22).

[6] In this sense, see Nicolas de Sadeleer, "Enforcing EUCHR Principles and Fundamental Rights in Environmental Cases," *Nordic Journal of International Law*, Vol. 81, No. 1 (2012), 39-74 <https://ssrn.com/abstract=2293314> (accessed on 2019.12.22).

[7] See Emilio F. Moran, *People and Nature: An Introduction to Human Ecological Relations*, Second Edition (Chichester: Wiley Blackwell, 2017); and Jean-Paul Deléage, *Histoire de l'écologie. Une science de l'homme et de la nature* (Paris: La Découverte, 1991).

[8] Sergio Albeverio, Denise Andrey, Paolo Giordano, and Alberto Vancheri (eds.), *The Dynamics of Complex Urban Systems: An Interdisciplinary Approach* (Heidelberg: Physica-Verlag, 2007).

b) Social-spatial inequality is a usual characteristic of urban life;[9] and

c) Cities and urban dwellers in different places of the world are becoming more and more vulnerable to disturbances (or shocks) and changing conditions (or unprecedented changes) that can alter urban environments as social-ecological systems, not only but especially because of climate change.[10]

These combined urban-environmental problems pose special challenges for urban governance and law, including the following:

a) Inequalities in urban environmental conditions may require legal regimes to create and effectuate (or implement) environmental rights for all (*legal frameworks' approach*);[11]

b) The vulnerabilities to uncertainties and instabilities of urban environments may require cities to adopt resilience-seeking policies and

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[9] Gwen van Eijk, *Unequal networks: Spatial segregation, relationships and inequality in the city* (Amsterdam: IOS Press BV, 2010); Richard Florida, *The New Urban Crisis: How Our Cities Are Increasing Inequality, Deepening Segregation, and Failing the Middle Class – and What We Can Do About It* (New York: Basic Books, 2017); Tom Slater, "Territorial Stigmatization: Symbolic Defamation and the Contemporary Metropolis," in John Hannigan, and Greg Richards (eds.), *The SAGE Handbook of New Urban Studies* (London: SAGE, 2017), 111-125; and OECD, *Divided Cities: Understanding Intra-urban Inequalities* (Paris: OECD Publishing, 2018).

[10] For all, see Silvia Macchi, and Maurizio Tiepolo (eds.), *Climate Change Vulnerability in Southern African Cities: Building Knowledge for Adaptation* (Dordrecht: Springer, 2014); Judy L. Baker (ed.), *Climate Change, Disaster Risk, and the Urban Poor: Cities Building Resilience for a Changing World* (Washington, D.C.: The World Bank, 2012); Neeraj Prasad, Federica Ranghieri, Fatima Shah, Zoe Trohanis, Earl Kessler, and Ravi Sinha, *Climate Resilient Cities: A Primer on Reducing Vulnerabilities to Disasters* (Washington, D.C.: The World Bank, 2009); Tetsuo Kidokoro, Junichiro Okata, Shuichi Matsumura, and Norihisa Shima (eds.), *Vulnerable Cities: Realities, Innovations and Strategies* (Dordrecht: Springer, 2008); and Mark Pelling, *The Vulnerability of Cities: Natural Disasters and Social Resilience* (London: Earthscan, 2003). From a social vulnerability perspective, see Costanzo Ranci, Taco Brandsen, and Stefania Sabatinelli (eds.), *Social Vulnerability in European Cities: The Role of Local Welfare in Times of Crisis* (Basingstoke: Palgrave Macmillan, 2014).

[11] Bridget M. Hutter, "Risk, resilience, inequality and environmental law: prospects and obstacles," in Bridget M. Hutter (ed.), *Risk, Resilience, Inequality and Environmental Law* (Cheltenham: Edward Elgar, 2017), 207-227.

legal regimes to become more adaptive (*e.g.* through *adaptive law*) so that cities adapt effectively (*policy and law's approach*);[12] and

c) Inequalities in the vulnerabilities experienced by urban communities may require governance reforms based on concepts of resilience justice, as a concept of justice based on capacity building (*law, policy and society's approach*).[13]

These observations raise important theoretical and empirical questions about the nature of the relationships among different realities, such as environmental rights, *resilience justice*, and *adaptive law*, in making cities more resilient, equitable, and environmentally well governed.

Cities and urban environments are increasingly becoming the territories for excellence where most of the human population gather to work and live. And even when it is not affordable for citizens to occupy city centres, they look for houses to dwell as close as possible to their workplaces. This phenomenon is at the basis of urban sprawl. And the increasing spatial dispersion of activities (distance between residential zones and work or study zones) and the consequent car dependency and emissions affect land use management, environment and climate change.[14]

Therefore, urban areas occupy 2% of the earth land surface, but are responsible for 70% of global gross domestic product (GDP) and, simultaneously, consume over 60% of global energy consumption and 75% of natural resources. Urban

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[12] Cameron Holley, and Ekaterina Sofronova, "New environmental governance: adaptation, resilience and law," in Bridget M. Hutter (ed.), *Risk, Resilience, Inequality and Environmental Law*, 129-146.

[13] For all, see Bruce Evan Goldstein (ed.), *Collaborative Resilience: Moving Through Crisis to Opportunity* (Cambridge, MA: The MIT Press, 2012); and Geoff A. Wilson, *Community Resilience and Environmental Transitions* (Abingdon: Routledge, 2012).

[14] OECD, *Rethinking Urban sprawl: Moving towards sustainable cities* (Paris: OECD Publishing, 2018), 122-125 <http://www.oecd.org/env/rethinking-urban-sprawl-9789264189881-en.htm> (accessed on 2019.12.23).

areas produce 70% of global waste, and also 70% of greenhouse gas (GHG) emissions. In addition to this reality, cities are expected to house almost 70% of the population in the whole world by 2050.[15]

With all these changes, urban ecosystems will experience increased land-use and land-cover change. Urbanisation will endanger more species and will be more geographically ubiquitous than any other human activity.[16] It will also rapidly transform critical habitats of global value, such as the Atlantic Forest Region of Brazil, the Cape of South Africa, coastal Central America, or even the Great Barrier Reef in Australia.[17]

At the same time, and because they are centres of increasing populational aggregation, cities may be described as places where inequalities and vulnerabilities can grow easily.[18] This means that cities face climate change, and, in in a large number of cases, this topic could be considered by authors as a major problematic factor of uncertainty in our days in urban environments.[19]

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[15] UN-Habitat III, *The New Urban Agenda* (New York: United Nations, 2016) <http://habitat3.org/the-new-urban-agenda/> (accessed on 2019.12.23); The World Bank, *Cities and Climate Change: An Urgent Agenda*, Vol. 10 (2010) <http://siteresources.worldbank.org/INTUWM/Resources/340232-1205330656272/CitiesandClimateChange.pdf> (accessed on 2019.12.23).

[16] Johan Colding, "Creating incentives for increased public engagement in ecosystem management through urban commons," in Emily Boyd, and Carl Folke (eds.), *Adapting Institutions: Governance, Complexity, and Social-Ecological Resilience* (Cambridge: Cambridge University Press, 2012), 101.

[17] Thomas Elmqvist et al, "Urban systems," in Sven Erik Jorgensen, and Brian D. Fath (eds.), *Encyclopedia of Ecology* (Oxford: Elsevier, 2008), 3665-3672.

[18] See David Satterthwaite, "Inequalities in environmental risks and resilience within urban populations in low- and middle-income nations," in Bridget M. Hutter (ed.), *Risk, Resilience, Inequality and Environmental Law* (Cheltenham: Edward Elgar, 2017), 108-125; and Beth Schaefer Caniglia, and Beatrice Frank, "Revealing the resilience infrastructure of cities: preventing environmental injustices-in-waiting," in Beth Schaefer Caniglia, Manuel Vallée, and Beatrice Frank (eds.), *Resilience, Environmental Justice and the City* (London: Routledge, 2017), 57-75.

[19] Stephen Jones, *Cities Responding to Climate Change: Copenhagen, Stockholm and Tokyo* (London: Palgrave Macmillan, 2018), 29-32; Gian Carlo Delgado Ramos (ed.), *Climate Change Sensitive Cities:*

Some examples are those of poor people living in slums, especially in the global south. Those populations are at particularly high risk from the impacts of climate change and natural hazards. They live in areas which are among the most vulnerable land within cities and the referred places are typically considered unwanted by higher-income communities and thus more affordable. Dwellers who reside in those locations seem to be exposed to impacts such as landslides, sea-level rise, flooding, and other types of hazards. This exposure to risks can be aggravated by the living conditions of overcrowded territories, the lack of adequate infrastructure and services, unsafe housing, inadequate nutrition, and poor health services or conditions. All the mentioned realities can rapidly turn small natural hazards or changes in climate into major disasters, which could result in the loss of basic services, damage or destruction to homes, loss of livelihoods, malnutrition, disease, disability, and loss of life of human and other species of fauna and flora.[20]

And this is also a reason why, in some cases, it could be considered that living in cities is becoming more difficult than living in rural areas.[21] There are far too more people in urban areas than in the countryside, and the increasing urban

Building capacities for urban resilience, sustainability, and equity (Mexico City: National Autonomous University of Mexico, 2017), 7-31; Charles F. Sabel, and David G. Victor, "Governing global problems under uncertainty: making bottom-up climate policy work," *Climatic Change*, Vol. 144, Issue 1 (September 2017), 15-27; Natalie Slawinski et al, "The Role of Short-Termism and Uncertainty Avoidance in Organizational Inaction on Climate Change: A Multi-Level Framework," *Business & Society*, Vol. 56, Issue 2 (March 2015), 253-282; Erwan Monier et al, "A framework for modeling uncertainty in regional climate change," *Climatic Change*, Vol. 131, Issue 1 (July 2015), 51-66; OECD, *Cities and Climate Change* (Paris: OECD Publishing, 2010), 65-67; Stephen C. Zehr, "Public representations of scientific uncertainty about global climate change," *Public Understanding of Science*, Vol. 9, Issue 2 (April 2000), 85-103.

[20] Judy L. Baker (ed.), *Climate Change, Disaster Risk, and the Urban Poor* (2012),1.

[21] Adam Okulicz-Kozaryn, *Happiness and Place: Why Life Is Better Outside of the City* (New York: Palgrave Macmillan, 2015), 46-95.

population is conspicuously consuming and polluting more and more.[22] Urban dwellers need large amounts of energy to maintain their high and unsustainable standards of living and all these current practices are depleting the finite resources that were originally available to all, and simultaneously changing the climate, and damaging the natural ecosystems of the whole planet Earth (not only in cities).[23]

Therefore, urban sprawl and the increasing aggregation of people in relatively small territories, such as the particular case of megacities,[24] is representing a greater problem for the sustainability of present and future generations[25], particularly in what respects human rights, given that there are usually questions of human health, bioethics,[26] pollution, safety or welfare that must be dealt with more effectiveness. This reality is even more aggravated, especially in developing regions, because, as noted by Crawford, "the vast majority of (…) urban immigrants will arrive with few resources and live in slum conditions."[27]

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[22] Okulicz-Kozaryn, *Happiness and Place* (2015), 100-102; André de Palma and Alexandre Guimard, "Urbanization: an overview," in Alessandra Michelangeli (ed.), *Quality of Life in Cities: Equity, sustainable development and happiness from a policy perspective* (Abingdon: Routledge, 2015), 25.

[23] Stephen Jones, *Cities Responding to Climate Change* (2018), 5-11; Andy Gouldson, Sarah Colenbrander, Andrew Sudmant, Faye McAnulla, Niall Kerr, Paola Sakai, Stephen Hall, Effie Papargyropoulou, and Johan Kuylenstierna, "Exploring the Economic Case for Climate Action in Cities," *Global Environmental Change*, Vol. 35 (November 2015), 93-105; David Dodman, "Blaming Cities for Climate Change? An Analysis of Urban Greenhouse Gas Emissions Inventories," *Environment and Urbanization*, Vol. 21, Issue 1 (2009), 185-201; and David Satterthwaite, "Cities' Contribution to Global Warming: Notes on the Allocation of Greenhouse Gas Emissions," *Environment and Urbanization*, Vol. 20, Issue 2 (2008), 539-549.

[24] On the subject of "megacities," see Jeffrey D. Sachs, *The Age of Sustainable Development* (New York: Columbia University Press, 2015), 359-365.

[25] For a better analysis of intergenerational justice from an environmental perspective, see Richard P. Hiskes, *The Human Right to a Green Future: Environmental Rights and Intergenerational Justice* (Cambridge: Cambridge University Press, 2009).

[26] In what regards the topics connecting law and bioethics, see Helena Pereira de Melo, *Manual de Biodireito* (Coimbra: Almedina, 2008).

[27] Colin Crawford, "Our Bandit Future? Cities, Shantytowns, And Climate Change Governance," *Fordham Urban Law Journal*, Vol. 36, No. 2 (2008), 214.

However, developing regions such as the Global South are not the only urban territories that can be affected by the consequences of climate change and the incapacity of facing uncertainty. European or North American cities are not exempt of these consequences.[28]

Therefore, urban justice, in its various aspects, is a major issue for governance, law, and society in a 21st century world.[29] And that issue must not only be analysed in relation to the problems of populations who live in those territories in this period of time, but also to those of the generations that will arrive and live in there in the future.[30]

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[28] See Elin Andersdotter Fabre, *Local Implementation of the SDGs & the New Urban Agenda: Towards A Swedish National Urban Policy* (Stockholm: Global Utmaning, 2017) <https://www.globalutmaning.se/wp-content/uploads/sites/8/2017/11/Local-Implementation-of-the-SDGs-The-New-Urban-Agenda-1.pdf> (accessed on 2019.12.26).

[29] See Barbara Oomen, "Introduction: The promise and challenges of human rights cities," in Barbara Oomen, Martha F. Davis, and Michele Grigolo (eds), *Global Urban Justice: The Rise of Human Rights Cities* (Cambridge: Cambridge University Press, 2016), 1-19.

[30] On the responsibilities of the present generations towards future generations, see Emmanuel Agius, "Obligations of Justice Towards Future Generations: A Revolution in Social and Legal Thought," in Emmanuel Agius and Salvino Busuttil (eds.), *Future Generations and International Law* (London: Earthscan Publications, 1998), 8. In what regards international documents, see the Declaration on the Responsibilities of the Present Generations Towards Future Generations, that resulted from the General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO), meeting in Paris from 21 October to 12 November 1997 at its 29th session, which foresaw in its article 1 that "[t]he present generations have the responsibility of ensuring that the needs and interests of present and future generations are fully safeguarded." <http://portal.unesco.org/en/ev.php-URL_ID=13178&URL_DO=DO_TOPIC&URL_SECTION=201.html> (accessed on 2019.12.26). Previously, in 1994, the Executive Board of UNESCO had already recognized the relevance of the La Laguna meeting, in which a group of non-governmental from all regions of the world adopted by consensus, on February 25 and 26, 1994, a declaration of the rights of future generations entitled the "Universal Declaration of Human Rights for Future Generations". See UNESCO Executive Board, 145 EX/41 PARIS, 22 September 1994 <http://unesdoc.unesco.org/images/0010/001022/102206E.pdf> (accessed on 2019.12.26). More recently, for the occasion of COP21, where the Paris Agreement was adopted, the President of the Republic of France invited former Minister of Environment Corinne Lepage to draft a "Universal Declaration on the Rights of Humanity," foreseeing the principle of intragenerational and

Therefore, environmental and spatial planning policies are a persistent concern for executive, legislative and judiciary powers, at international, national, regional and local levels.[31] Political and administrative officers must be, obviously, concerned with people's quality of life (welfare, well-being or even happiness), the balance among the various factors and resources present in the nature, the efficient use of those resources, cohesion and territorial sustainability[32], the future of the world we live in, and the meeting the needs of tomorrow's generations.[33]

Because, as Commoner posited in his four laws of ecology, in what concerns nature "everything is connected to everything else."[34] Or, from another

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intergenerational responsibility, equity solidarity (article 1), the principle of humanity's dignity (article 2), the principle of continuity of human existence (article 3), and the principle of non-discrimination of belonging to a generation (article 4), but also rights of humanity, such as the right to live in a healthy and ecologically sustainable environment (article 5) and duties towards humanity, such as duty to ensure that the legacy of resources, ecological balance, the common heritage is conserved (article 12) or the duty to guide scientific and technical progress towards the preservation and health of humans and other species (article 14). See Corinne Lepage, *Déclaration universelle des droits de l'humanité: Rapport à l'attention de Monsieur le Président de la République* (Paris: Présidence de la République, 2015) <http://www.ladocumentationfrancaise.fr/rapports-publics/154000687/index.shtml#> (accessed on 2019.12.26).

[31] About the phenomenon of unplanned cities, see James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven and London: Yale University Press, 1998), 127-130.

[32] On the issues of sustainability, see on a broader perspective Klaus Bosselmann, *The Principle of Sustainability: Transforming law and governance*, 2nd ed. (New York, NY: Routledge, 2016).

[33] At this point, it should be highlighted that environmental protection must be a preoccupation from an immediate perspective, but also for the future. On this issue, see Roland Carbiener, "La demande des scientifiques," in Alexandre Kiss and Roland Carbiener (ed.), *L'écologie et la loi: Le statut juridique de l'environnement* (Paris: L'Harmattan, 1989), 267.

[34] Barry Commoner, *The Closing Circle: Nature, Man, and Technology* (New York: Knopf, 1971), 16-19. Also in this sense, see Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 1962); Rachel Carson, *The sea around us* (Oxford: Oxford University Press, 1951); Mark Hamilton Lytle, *The Gentle Subversive: Rachel Carson, Silent Spring, and the Rise of the Environmental Movement* (New York and Oxford: Oxford University Press: 2007), 237. For more on Commoner's Four Laws of Ecology, see Michael Egan, "The Social Significance of the Environmental Crisis: Barry Commoner's The Closing Circle," *Organization and Environment*, Vol. 15 (December 2002), 443-457; and Michael Egan, "Die technologische Wende und Barry Commoners Gesetze der Ökologie: The Closing Circle neu gelesen," *Natur und Kultur*, Vol. 4 (Fall 2003), 30-47.

perspective, there should be "a solidarity of living things"[35], because, in accordance to Leopold's "land ethic", human beings have become plain members and citizens of the land-community.[36]

Some examples of urban social-ecological vulnerability may be found in a large number of different places. It is possible to find examples of vulnerability not only in the Global South, but also in other parts of the world, such as Northern America, from Boston (MA) to Los Angeles (CA), Portland (OR), Raleigh (NC), or Tampa (FL), as demonstrated by McCormick.[37] And in fact, in the United States (US), an estimated 249 million people (80.7 % of the population) live in urban areas.[38]

It is considered that climate change affects local population well-being and health through a range of direct, indirect and systematic mediated pathways[39], such as heat waves, flooding, drought, storm surge or other extreme events, which can give rise to mortality, traumatic injuries, infectious disease and morbidity.[40]

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[35] Ulrich Beck, *Risk Society: Towards a New Modernity*, translated by Mark Ritter (London: Sage, 1992), 74.

[36] For this author, "A land ethic (…) cannot prevent the alteration, management, and use of (…) 'resources' but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state. In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such." Aldo Leopold, *A Sand County Almanac and Sketches Here and There* (Oxford: Oxford University Press, 1949), 204.

[37] Sabrina McCormick, "Assessing climate change vulnerability in urban America: stakeholder-driven approaches," *Climate Change*, Vol. 138, Nos. 3-4 (October 2016), 397-410.

[38] According to the *2010 Census Urban Area Facts*, from the US Census Bureau. <https://www.census.gov/geo/reference/ua/uafacts.html> (accessed on 2019.12.27).

[39] See Anna C. Jonsson et al, "Cities' capacity to manage climate vulnerability: experiences from participatory vulnerability assessments in the lower Göta Älv catchment, Sweden," *Local Environment*, Vol. 17, Nos. 6-7 (May 2012), 735-750; and Tord Kjellstrom and Anthony J. McMichael, "Climate change threats to population health and well-being: the imperative of protective solutions that will last," *Glob Health Action*, Vol. 6 (2013), 20816.

[40] Felicity Thomas et al, "Extended impacts of climate change on health and wellbeing," *Environmental Science and Policy*, Vol. 44 (2014), 271-278.

Therefore, climate change can multiply existing risks and illnesses in urban areas, easing the exacerbation pre-existing health conditions and the increase of the prevalence of climate sensitive health outcomes, because of poor local infrastructure and dense built environments.[41] These several risk factors present a high challenge for vulnerability assessment and requires stronger managing efforts regarding people's behaviours and reactions, as well as the constant changes in the affected territories.[42]

Examples of urban vulnerability could be mentioned in cases such as Brazil's coastal areas, where cities can be highly susceptible to the effects of climate change, particularly to sea-level rise and extreme rainfall events, resulting in increased social and environmental vulnerabilities.[43] In addition to these perspectives from north to south of the American continent, it is also possible to refer examples from Zimbabwe, regarding the increasing of the urban heat island intensity and the population's vulnerability to heat-related stress in the Harare metropolitan area, due to the conversion of natural landscapes to impervious surfaces.[44] Moreover, the Asian continent can be added to this list, with examples from Vietnam, where cities' increasingly sophisticated and interdependent supply chains and transportation logistics, for water, energy, workforce, food and consumables are making it harder to assess vulnerabilities, they compound

[41] Hilary Jane Bambrick et al, "Climate change and health in the urban environment: adaptation opportunities in Australian cities," *Asia-Pacific Journal of Public Health*, Vol. 23, 2 suppl. (January 2011), 67S-79S.

[42] Sabrina McCormick, "Assessing climate change vulnerability in urban America" (2016), 399. See also Zoé A.Hamstead, *A spatial-temporal approach for understanding vulnerability and resilience to extreme heat in New York City*, The New School (Ann Arbor, MI: ProQuest, 2016), 10126010.

[43] Vitor Baccarin Zanetti et al, "A Climate Change Vulnerability Index and Case Study in a Brazilian Coastal City," *Sustainability*, Vol. 8 (2016), 811-822.

[44] Terence D. Mushore et al, "Determining extreme heat vulnerability of Harare Metropolitan City using multispectral remote sensing and socio-economic data," *Journal of Spatial Science*, Vol. 63, Issue 1 (2018), 173-191.

climate risks and create greater susceptibility to disruption.[45] In fact, most of the cities have been developed, designed and built to cope with the historic climate, but not with the climate trends, extremes and other challenges of the future.

Europe is not exempt of these problems and the Polish example could be referred in this analysis. In European cities, such as Wrocław, phenomena of urbanisation and climate change have been interacting with the growing number of elder people living in cities. This means that when phenomena such as increased riverine flooding hazards occur, severe impacts on human lives can be caused and older communities are a relevant part of the population who are more exposed to those problems.[46] It is, therefore, necessary to find ways (both at governance and legal levels) of assessing the vulnerabilities and protecting those populations.

In order to face natural threats, the power of scientists is increasing, in regard to their specialised knowledge. It is, therefore, a duty of those who govern, such as legislators, public officials or judges, to exercise their office under the advice of the experts in different scientific areas.[47] And the legal system must make an effort to accompany scientific development and knowledge, in order to protect populations, land, ecosystems and natural resources.

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[45] Phong Tran et al, "Building Urban Climate Resilience: Experiences from Vulnerability Assessment in Hue City, Viet Nam," in Juha Ilari Uitto, and Rajib Shaw (eds.), *Sustainable Development and Disaster Risk Reduction. Disaster Risk Reduction (Methods, Approaches and Practices)* (Tokyo: Springer, 2016), 57-69.

[46] Szymon Szewrański et al, "Socio-Environmental Vulnerability Mapping for Environmental and Flood Resilience Assessment: The Case of Ageing and Poverty in the City of Wrocław, Poland," *Integrated Environmental Assessment and Management*, Vol. 14, Issue 5 (September 2018), 592-597.

[47] Hans Jonas, *Une éthique pour la nature* (Paris: Desclée de Brower, 1993), 62. See also Maria da Glória F. P. D. Garcia, *O Lugar do Direito na Proteção do Ambiente* (Coimbra: Almedina, 2007), 23-24. Some authors have stood against "the regime of those who know" (*kein Regime der Besserwissenden*). See Reinhold Zippelius, "Politik und Sachverstand," in Max-Emanuel Geis, and Dieter C. Umbach (eds.), *Plannung – Steuerung – Kontrolle, Festschrift für Richard Bartlsperger zum 70. Geburtstag* (Berlin: Duncker Humblot, 2006), 185-196.

It is, therefore, essential to recognise the protection of the populations' rights to environmental conditions that permit them to live in a healthy and balanced way. But it is also fundamental to ensure them the capacity to adapt to disturbances and changes, protecting a general social-ecological resilience, and more particularly an equal access to resilience for those lower-income, marginalised, segregated, or more oppressed communities.[48]

For that reason, the study that will be presented in this dissertation intends to find to what extent proclaiming environmental rights is sufficient (or not) to solve social-ecological problems caused by uncertainty within urban territories and ensure resilience justice for communities living in those areas. The second part of the study intends to demonstrate that resilience justice can be better achieved and enhanced, through the implementation of tools given by a more flexible and adaptive law.[49] And this is also a better way of protecting environmental rights in cities.

Within the legal system, environmental rights could be, therefore, understood as an important starting point or a condition (though not essential) to face or tackle vulnerabilities and uncertainty in "nature-society" interactions.[50] Actually, rights can assume both the roles of simply aspirational or programmatic normative principles or of effective and strong legal elements, depending on the implementation. In many cases, procedural rights or even mechanisms of adaptive or more flexible law can more easily contribute for these objectives. However, where legal protection and its necessary change or adaptation are still

[48] Craig Anthony (Tony) Arnold, "Adaptive law," in Rosemary Lyster, and Robert R.M. Verchick (eds.), *Research Handbook on Climate Disaster Law: Barriers and Opportunities* (Cheltenham: Edward Elgar Publishing, 2018), 185-186.

[49] Arnold, "Adaptive Law" (2018), 169-186.

[50] See Bettina Lange, "How to think about 'nature-society' interactions in environmental law 'in action,'" in Andreas Philippopoulos-Mihalopoulos (ed.), *Research Methods in Environmental Law: A Handbook* (Cheltenham: Edward Elgar, 2017), 29-50.

not effective, it is essential for communities to find a *plus* factor, i.e. going beyond the law barriers and trying to enter the realm of collaborative action of the populations for resilience.[51] This topic, more based on social action, will be developed in a later phase of the dissertation.

Nevertheless, at this point, it is noteworthy that, even if the planet that is understood as increasingly overpopulated, sparsely populated spaces remain a dominant feature.[52] These mentioned immense, lightly populated landscapes can include realities of rural settlements, towns, agricultural spaces, extractive economies, indigenous reservations, and nature and biodiversity conservation areas. Those territories play a crucial role regarding climate change adaptation and mitigation, being relevant to ensure carbon sequestration to provisioning of water, food, and energy to cities. Even though, public decisions and legal frameworks in most of those places do not give much attention both to the ecological resilience and the diverse views and needs of their populations. Therefore, it is urgent that inclusive governance and law-making are implemented, in order to attempt to mitigate and adapt to climate change and conserve ecosystems, both in overpopulated and sparsely inhabited territories.[53]

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[51] See John Randolph, "Creating the Climate Change Resilient Community," in Bruce Evan Goldstein (ed.), *Collaborative Resilience: Moving Through Crisis to Opportunity* (Cambridge, MA: MIT Press, 2012), 127-148; Wilson, *Community Resilience and Environmental Transitions* (2012), 14-51.

[52] According to LandScan data platform, Oak Ridge National Laboratory, ~57% of Asia, ~81% of North America, and ~94% of Australia have population densities below 1 person per square kilometre, equivalent to the population density of most of the Sahara Desert <https://landscan.ornl.gov/> (accessed on 2019.27).

[53] Eduardo S. Brondizio and Francois-Michel Le Tourneau, "Environmental governance for all," *Science*, Vol. 352, Issue 6291 (10 Jun 2016), 1272-1273.

2. Subject matter, brief definitions, and research questions

2.1. Focusing on environmental rights and resilience justice in cities

Uncertainty, vulnerabilities, and inequalities are real and current problems amongst territories and the communities that live in them, namely in cities or urban environments.[54]

Environmental rights may play an essential role to address or tackle those issues and try to trace a path to achieve *resilience justice*.[55] They could act as principles, elements, triggers, impulses, or driving forces. And this dissertation intends to understand what their specific role is. However, it is not obvious or clear that rights are *per se* totally effective or sufficient elements for implementing that goal of *resilience justice* within territories and communities. Searching for other legal or governance solutions is the other aim of this dissertation.

2.2. Brief definitions

The research that is about to be presented in this dissertation can only be understood if several definitions are briefly introduced from the beginning. Therefore, concepts such as *cities*, *environmental rights*, *resilience* and *resilience justice*, and even *adaptive law* will be better understood if they are introduced to the reader.

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[54] Chandra Russo, and Andrew Pattison, "The pitfalls and promises of climate action plans," in Beth Schaefer Caniglia, Manual Vallé, and Beatrice Frank (eds.), *Resilience, Environmental Justice and the City* (Abingdon: Routledge, 2017), 178-179; Barbara M. Oomen, "The promise and challenges of human rights cities" (2016), 1-19; and Chad J. McGuire, *Environmental Law from the Policy Perspective* (Boca Raton, FL: CRC Press, 2014), 58-60.

[55] The concept of resilience justice will be later developed in this dissertation. However, for more information at this point, see Emmanuel Frimpong Boamah and Craig Anthony (Tony) Arnold, "Assemblages of Inequalities and Resilience Ideologies in Urban Planning," in Craig Anthony (Tony) Arnold, Cedric Merlin Powell, Catherine Fosl, and Laura Rothstein (eds.), *Racial Justice in American Land Use* (Cambridge: Cambridge University Press, in press).

2.2.1. Cities and urban environments

The first concept to be introduced is the one of *city* or, more broadly, *urban environment*.[56] Actually, the American historian and sociologist Lewis Mumford conceived the reality of the city as:

> "(…) a theatre of social action, and an aesthetic symbol of collective unity. The city fosters art and is art; the city creates the theatre and is the theatre. It is in the city, the city as theatre, that man's more purposive activities are focused, and work out, through conflicting and cooperating personalities, events, groups, into more significant culminations. Without the social drama that comes into existence through the focusing and intensification of group activity there is not a single function performed in the city that could not be performed – and has not in fact been performed – in the open country. The physical organization of the city may deflate this drama or make it frustrate; or it may, through the deliberate efforts of art, politics, and education, make the drama more richly significant, as a stage-set, well-designed, intensifies and underlines the gestures of the actors and the action of the play."[57]

However, the concept of city differs from country to country.[58] The *2017 Demographic Yearbook* of the United Nations Department of Economic and Social

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[56] For a very basic definition of *city*, see *Merriam-Webster Dictionary*'s terminology: "a place where people live that is larger or more important than a town: an area where many people live and work" <http://www.merriam-webster.com/dictionary/city> (accessed on 2019.12.27).

[57] Lewis Mumford, "What is a city," *Architectural Record*, Vol. 82 (November 1937), 92-96.

[58] In Portugal, for example, the old Law no. 11/82, 2 June, which approved the framework for the creation and extinction of local governments, was in force until 2012. Its article 13 provided that a small town (*vila* in Portuguese) could only be elevated to the category of city when it reached a number of electors, (in a continuous agglomerate) superior to 8,000 people and having at least half of the following collective facilities:

a) Hospitals with permanent services;
b) Pharmacies;
c) Fire departments;
d) Entertainment buildings and cultural centres;

Affairs presented on its Table 6 the different definitions of "urban (area)" around the world.[59]

In Botswana, for example, an "agglomeration of 5,000 or more inhabitants where 75 per cent of the economic activity is non-agricultural" is considered an urban area. On the other hand, in the United States, it takes "2,500 or more inhabitants, generally having population densities of 1,000 persons per square mile or more (…)" for a territory to be receive that designation. In Portugal, "localities with 2.000 or more inhabitants" are considered urban areas. For Peruvian legal system, urban areas are "populated centres with 100 or more dwellings", and in Iceland they are "localities of 200 or more inhabitants". Therefore, as it is possible to understand by these definitions, there are extremely dissimilar conceptions of what an urban area is.[60]

It may also vary according to administrative criteria or political boundaries, population density or economic function, as well as to the existence of urban characteristics such as paved streets, water infrastructure or sewers.[61]

Considering the above referred different variations of the concept, the Organisation for Economic Cooperation and Development (OECD) and the

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e) Museum and library;
f) Hotel amenities;
g) Preparatory and secondary schools;
h) Preschools and nursery schools;
i) Urban and suburban public transports;
j) Public parks and gardens.

This act was repealed by the Law no. 22/2012, 30 May, which approved a new framework for the territorial administrative reorganization. The concept of *city* is not anymore provided by Portuguese administrative law, since it lost all its relevant legal purpose.

[59] United Nations, *2017 Demographic Yearbook*, ST/ESA/STAT/SER.R/47 (New York: United Nations, 2018), 119-124 <https://unstats.un.org/unsd/demographic-social/products/dyb/dybsets/2017.pdf> (accessed on 2019.12.27).

[60] United Nations, *2017 Demographic Yearbook* (2018), 119-124.

[61] On the definition of urban areas see UNICEF, *The State of The World's Children 2012: Children in an Urban World*. (New York: UNICEF, 2012) <http://www.unicef.org/sowc2012> (accessed on 2019.07.09).

European Commission (EC) tried to develop, for analytical purposes, a new definition of a city and its commuting zone.[62] This concept presented by OECD and EC was clearly explained by Dijkstra and Poelman as a "harmonised definition" developed in four steps: (i) a step 1, in which high density population grid cells of more than 1,500 inhabitants per sq km within a municipality are identified; (ii) in a step 2 is identified the urban centre, which is composed of a cluster of high density cells with more than 50,000 inhabitants; (iii) step 3 consists of assessing if more than 50% of the population of the commune/municipality resides in the urban centre defined in the previous step; (iv) step 4 is the moment in which is concluded (or not):

> "that 1) there is a link to the political level, 2) that at least 50 % of city the population lives in an urban centre and 3) that at least 75 % of the population of the urban centre lives in a city." [63]

Other definitions could be hereby presented. However, the most relevant features that are to be analysed in this research are those related to the characteristics of certain territories, more or less delimitated, which are inhabited by large numbers of people and in a more or less continuous consolidated structure of neighbourhoods. In these places, which have a considerable dimension, people can dwell, work, earn and spend their livelihoods, and be and feel part of a community, in a certain environment.

Actually, cities are usually understood as places where large numbers of people live and work. At the same time, cities are also hubs of government, commerce and transportation. Nevertheless, the definition of the geographical boundaries

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[62] See OECD, *Redefining "Urban": a new way to measure metropolitan areas*, (Paris: OECD Publishing, 2012) <https://www.oecd-ilibrary.org/urban-rural-and-regional-development/redefining-urban_9789264174108-en> (accessed on 2019.12.28).

[63] See Lewis Dijkstra and Hugo Poelman, "Cities in Europe: the new OECD-EC Definition," *European Commission Regional Focus*, RF 01/2012 (2012), 2. <https://ec.europa.eu/regional_policy/sources/docgener/focus/2012_01_city.pdf> (accessed on 2019.12.28).

of a city can represent some debate. Actually, no standardised international criteria are presented for determining the limits of a city and often multiple definitions of boundaries are established for different cities in different countries.

According to studies from the UN, one type of definition, which is often referred to as the "city proper", understands the reality of a city according to its administrative boundary. From another approach, considered as that of an "urban agglomeration", the territory is seen under the extent of the contiguous urban area, or built-up area, to determine the limits of the city. A third formulation of what a city could be is the one of "metropolitan area." This concept defines the city boundaries according to different degrees of economic and social interconnectedness of other nearby areas, which can be identified, for example, by interlinked commerce or commuting patterns.[64]

Therefore, the option of how to define the limits of a city is consequential for assessing the size of its population. An example presented by the UN that is worth mentioning is that of the city of Toronto, Canada, where, according to the 2011 census, approximately 2.6 million people resided within the "city proper." However, the population of the surrounding "urban agglomeration" was almost the double of it, with 5.1 million inhabitants. Then, the population of the "metropolitan area" was even larger still, with 5.6 million people.[65]

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[64] See United Nations, *The World's Cities in 2018: Data Booklet* (ST/ESA/SER.A/417), Department of Economic and Social Affairs, Population Division (New York: United Nations, 2018). <https://www.un.org/en/events/citiesday/assets/pdf/the_worlds_cities_in_2018_data_booklet.pdf> (accessed on 2019.12.28).

[65] Following the UN's most recent perspective, the "city proper" described here, corresponds to the Toronto "census subdivision-municipality" as defined in the 2011 Census of Canada; the "urban agglomeration" corresponds to the Toronto "population centre"; and the "metropolitan area" corresponds to the Toronto "census metropolitan area." Population data and boundaries were taken from Statistics Canada <http://www12.statcan.gc.ca/census-recensement/index-eng.cfm> (accessed on 2019.12.28).

Simultaneously, the rates of population growth were different in the three approaches of what a city is. Between the censuses developed in 2006 and 2011, the population within Toronto's "city proper" grew at an average annual rate of 0.9 per cent, compared to 1.5 per cent for the "urban agglomeration", and 1.8 per cent for the "metropolitan area".[66]

The 2018 revision of the UN World Urbanisation Prospects (WUP) attempted wherever possible, given the data that was available, to observe the concept of "urban agglomeration" in what regards to cities.[67] Nevertheless, in order to assemble a series of different population estimates that was consistent for a city over time, the "city proper" or "metropolitan area" concepts ended to be used instead. Among the 1,860 cities with at least 300,000 inhabitants in 2018 included in WUP, 55 per cent of them follow the statistical approach of "urban agglomeration." At the same time, 35 per cent of the studied cities follow the "city proper" concept and only the remaining 10 per cent adopt the concept of "metropolitan areas."[68]

For these reasons, and because there is more than one specifically defined concept of city, different from one country (or even city) to another, the more applicable reality to be analysed in this research appears a simpler and not so complex idea, such as that of *urban environment*. The concept is defined by Haughton and Hunter as a:

> "complexly structured and richly textured [reality] in its interweaving of a mixture of natural, built-form, economics social and cultural dimensions. (…) [It] can be said to consist of natural, built and social components. (…) [And] includes air, water, land, climate, flora and fauna, whilst the built environment encompasses the fabric of buildings, infrastructure and urban

[66] United Nations, *The World's Cities in 2018: Data Booklet* (2018).

[67] See WUP <https://population.un.org/wup/> (accessed on 2019.12.28).

[68] WUP.

> open spaces. The social component embraces less tangible aspects of urban areas, including aesthetic and amenity quality, architectural styles, heritage, and the values, behaviour, laws and traditions of the resident community."[69]

Therefore, the idea of an *urban environment*, which will be embraced in this research is the one that better permits the analysis of different urban realities in geographically disparate places and continents. This means that the terms of *city*, *urban area* or *urban environment* used along this dissertation must always be understood as that latter concept.

2.2.2. Environmental rights

The meaning of environmental rights is generally considered as any proclamation of a right to environmental conditions of a specified quality. In a broad sense, they are enshrined in over 100 constitutions, through the provision of government duties to protect the environment, specific individual rights to a healthy environment, individual duties to protect the environment, or even procedural environmental rights.[70]

This category of rights could, therefore, be divided in different typologies, which will be later defined in this dissertation. One of the most relevant divisions is that between human, fundamental and non-fundamental state-created rights. Other division is that between substantive rights, as those in which the environment has a direct effect on the existence or the enjoyment of the right itself,[71] and

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[69] Graham Haughton, and Colin Hunter, *Sustainable Cities* (London: Regional Studies Association, 2003), 14. On this issue, see also Andreas Philippopoulos-Mihalopoulos, *Absent Environments: Theorising Environmental Law and the City* (Abingdon: Routledge, 2007); and Michael Bennett, and David W. Teague, *The Nature of Cities: Ecocriticism and Urban Environments* (Tucson: University of Arizona Press, 1999).

[70] David Richard Boyd, *The Environmental Rights Revolution: A Global Study of Constitutions, Human Rights, and the Environment* (Vancouver: UBC Press, 2012), 45-77.

[71] Substantive rights may comprise civil and political rights, such as the rights to life and liberty, freedom of expression, freedom of religion; cultural and social rights such as rights to health,

procedural rights, which could be considered as a key point of intersection between environmental and human rights law. These ones prescribe formal steps to be taken in enforcing legal rights.[72]

Although environmental rights are proclaimed as fundamental rights in a large number of constitutions all over the world, their effectiveness in relation to the implementation of resilience for social-ecological systems does not always depend on those constitutional provisions. And this is one of the main arguments that justifies the development of the present research.

Actually, in the face of global environmental challenges there is an increasing urgency for legal systems to answer to the needs of sustainability and resilience. It is not only a need to ensure protection of the environment, but also to protect those inhabitants who suffer as a result of environmental degradation.[73] And here there is a strong connection to the movement for environmental justice and, more recently, the theory of resilience justice (better explained in further paragraphs).[74]

One way (to try) to achieve those different kinds of protection has been through the mechanism of "rights to, relating to, and for the environment." The creation and provision of such rights intends to allow individual citizens to directly protect the environment where they live in, thus harnessing the power of the

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water, food, and culture; and collective rights affected by environmental degradation, such as the rights of indigenous peoples (which is recognised in human rights and environment law).

[72] Procedural rights include rights to free, prior and informed consent, access to information, participation in decision-making, and access to justice. These rights are found in both environmental and human rights instruments and have been interpreted under both regimes to provide broad protections for environmental interests. See the website of the United Nations Environment Programme (UNEP) <https://www.unenvironment.org/explore-topics/environmental-rights-and-governance/what-we-do/advancing-environmental-rights/what> (accessed on 2019.12.28).

[73] Stuart Bell et al, *Environmental Law*, Ninth Edition (Oxford: Oxford University Press, 2017), 76-78.

[74] For earlier writings on environmental justice in cities, see Graham Haughton, "Environmental justice and the sustainable city," *Journal of Planning Education and Research*, Vol. 18, No. 3 (1999), 233-243.

private citizen in environmental protection: "such rights offer citizens an extra tool to enforce lax environmental legislation and address lenient executive enforcement of such laws."[75] These kinds of rights, in theory, could therefore be enforceable against the state, and they could also be enforceable directly against other private entities, possibly considered as polluters.[76]

2.2.3. Resilience and resilience justice

Although generally understood today as a buzzword, the concept of resilience was famously introduced in ecology by Holling, as ecological resilience as the capacity of a system to absorb and still retain its basic function and structure[77]. However, Walker and Salt have refined lately the definition resilience as the capacity of systems to absorb disturbance and reorganise so as to retain their functions, structures, and feedbacks, keeping the same identity.[78]

It is a capacity of systemic response to disturbances, underscoring systems' absorption and adaptation to changes and disturbances, as well as how to resist and shrug them off.[79]

Several researchers have already demonstrated that the overall capacity of social-ecological-institutional systems to adapt can be even improved when that capacity is also used to address social injustices, as well as to empower the roles

[75] Ole W. Pedersen, "European Environmental Human Rights and Environmental Rights: A Long Time Coming?," *Georgetown International Environmental Law Review*, Vol. 21, Issue 1 (2008), 73-74.
[76] Bell et al, *Environmental Law* (2017), 76-78.
[77] Crawford Stanley Holling, "Resilience and Stability of Ecological Systems," *Annual Review of Ecology and Systematics*, Vol. 4 (1973), 1-23.
[78] Brian Walker and David Salt, *Resilience Practice* (London: Island Press, 2012), 3.
[79] Benson and Craig, *The End of Sustainability* (2017), 58.

of the most marginalised communities.[80] And here resilience justice is introduced, putting community resilience together with equity.

Resilience justice is, therefore, that capacity of communities to adapt to the regular disturbances, maintaining their identity and being granted an equal access to services, infrastructures and justice, in a certain territory.[81]

2.2.4. Adaptive law

Adaptive law appears as an assortment of legal tools, which seek to build the resilience and adaptive capacity of vulnerable and marginalised parts of the society. It does not merely seek to remedy the effects of the harms that those members of the society suffer. In the words of Arnold:

> "Tools like compensation or reparations, socially funded relocation, subsidised resources, and the invalidation of policies and actions that cause disproportionate harm are necessary but not sufficient. Justice requires addressing the underlying disparities in communities' vulnerabilities, including both risks of climate disaster and the communities' adaptive capacities."[82]

The way to enhance the capacity of legal systems to be more adaptive is through the implementation of tools or elements, such as greater flexibility; use of law for transformation; a revolutionary evolution in the law; and an intentional focus on

[80] Brian C. Chaffin et al, "Resilience, Adaptation, and Transformation in the Klamath River Basin Social-Ecological System," *Idaho Law Review*, Vol. 51 (2014), 157-193; Craig Anthony (Tony) Arnold, "Legal Castles in the Sand: The Evolution of Property Law, Culture, and Ecology in Coastal Lands," *Syracuse Law Review*, Vol. 61, Issue 2 (2011), 213-260.

[81] The concept of *resilience justice* will be explained and developed with more detail in a further moment of this dissertation. See Boamah and Arnold, "Assemblages of Inequalities and Resilience Ideologies in Urban Planning" (in press).

[82] Arnold, "Adaptive Law" (2018), 185.

justice, including climate justice, disaster justice, and most especially resilience justice.[83]

And the implementation or enhancement of resilience justice within urban environments and communities can only be effective if, at least, these tools (ideally all of them) are accepted by the legal system and the governance processes of the city.

2.3. Research questions

This dissertation aims to shed both descriptive and empirical light on the current relevance of environmental rights and their effectiveness in protecting social-ecological balance, with a particular attention to urban environments. In a nutshell, it intends to address the following two general questions:

a) *To what extent are environmental rights sufficient legal instruments to effectively implement or achieve a status of social-ecological resilience justice? and*
b) *To what extent could adaptive law play a role as a new legal tool to address or remedy that possible insufficiency of environmental rights to achieve resilience justice (within the reality of urban environments)?*

The starting point of the research is the idea that *environmental rights, as variables, can contribute to implement or enhance social-ecological resilience justice in urban environments, but they do not appear to be as enough effective as they are expected to*. Consequently, other instruments or mechanisms need to be used and implemented by different legal systems, such as those based on *adaptive law* approaches.

The further conclusions of this study are, therefore, expected to contribute to the use of more adaptive approaches in decision- and law-making, but also in the

[83] Arnold, "Adaptive Law" (2018), 171.

application of law and policies in urban environments, with the aim of improving environmental, territorial, and community resilience, as well as equal access to public (and private) services, infrastructures, and justice.

3. Methodology

3.1. Overall research approach

The goal of this study is to improve the understanding about the protection of environmental rights and its relationship with the enhancement of social-ecological resilience and justice in urban environments, making use of legal and governance tools. For that reason, a number of inter-disciplinary scholarly works in the field of social-ecological resilience and adaptation may serve as ground for discussion on the methodology of this work.[84]

In effect, to address these questions, the research for this dissertation focuses on key works of theoretical and doctrinal literature, statutory and case law, and a methodological perception of different geographical illustrative contexts and examples. Although international legal instruments are analysed, the study intends to be based on different contextualising examples of the European Union (EU) and the United States of America (US).

This study intends to generally describe some perspectives of the EU law and the US federal law and, at the same time, give a perception of some EU member-state domestic legislation and US state law. Therefore, a number of legal frameworks, judicial, and governance approaches are to be studied in this research.

[84] See, as some examples, Craig Anthony (Tony) Arnold et al, "Cross-interdisciplinary insights into adaptive governance and resilience," *Ecology and Society*, Vol. 22, Issue 4 (2017), 14 <https://www.ecologyandsociety.org/vol22/iss4/art14/> (accessed on 2020.01.06); Judith A. Layzer, *Natural Experiments: Ecosystem-Based Management and the Environment* (Cambridge, MA: MIT Press, 2008).

Table 1: Contextualising legal frameworks

Supranational/Federal Law	EU Law	US Federal Law
(Member-)State Law	Danish Law	Florida State Law
	Hungarian Law	Pennsylvania State Law
	Portuguese Law	Washington State Law

Based on this contextualising and illustrative investigation of some of the EU (supranational[85] and Member-State) legal frameworks and other (Federal and State) legal frameworks from the US (identified in Table 1), the possible capacities of adaptation (or flexibility) of the legal systems will be explained, in accordance with Arnold and Gunderson's conception of what the characteristics of maladaptive and adaptive law should be.[86] The main aim of this part of the present work serves, therefore, to demonstrate why and how legal systems can more effectively improve their application to the reality of concrete and specific territories and communities they intend to regulate, regarding social-ecological problems.

The overall research strategy of this study chooses a qualitative approach, employing formal, objective, systematic process of data collection and analysis to test the research questions. Legal systems are complex and multifaceted in their range and variability, and the same happens with social and ecological systems. They operate at diverse levels and at several scales and layers. Therefore, a qualitative inquiry recognises the complex and dynamic characteristics of legal,

[85] On EU supranational or (possibly) *para-federal* environmental law, see Tiago de Melo Cartaxo, "Environmental subsidiarity in the EU: or halfway to green federalism?," *Perspectives on Federalism*, Vol. 10, Issue 3 (2018), 303-324.

[86] Craig Anthony (Tony) Arnold and Lance H. Gunderson, "Adaptive Law and Resilience," *Environmental Law Reporter*, Vol. 43, Issue 5 (2013), 10429. A specific table formulated by the authors will be presented further in this dissertation.

social and ecological realities and aims to comprehend phenomena in context-specific, real world scenarios, facilitates a deep and intimate involvement with a topic of investigation in its natural setting, and allows the author to reveal the different layers of meaning. From a legal perspective, qualitative research appears to be the ideal approach in order to build theories, identify themes and conceptual domains, as well as generating hypotheses for testing in actual settings.[87]

Proceeding from this frame of reference, the research approach of this project involves collecting information using systematic processes and procedures, which include the qualitative approaches identified in Table 2.

Table 2: Methodological qualitative approaches

Approach	Explanation
Descriptive	This research seeks to identify and describe phenomena as they exist. From the global reality of changing urban environments to the need of protecting a certain number of environmental rights[88] and to find legal instruments that

[87] See Jane Holder and Donald McGillivray, "Bringing environmental justice to the centre of environmental law research: developing a collective case study methodology," in Philippopoulos-Mihalopoulos (ed.), *Research Methods in Environmental Law* (2017), 184-206; Philip Langbroek et al, "Methodology of Legal Research: Challenges and Opportunities," *Utrecht Law Review*, Vol. 13, Issue 3 (2017), 1-8; Katerina Linos and Melissa Carlson, "Qualitative Methods for Law Review Writing," *The University of Chicago Law Review*, Vol. 84 (2017), 213-238; David Silverman, "Introducing Qualitative Research," in David Silverman (ed.), *Qualitative Research* (London: SAGE, 2016), 3-13; Douglas Fisher (ed.) *Research Handbook on Fundamental Concepts of Environmental Law* (Cheltenham: Edward Elgar, 2016); Jane F. Gilgun, "Writing Up Qualitative Research," in Patricia Leavy (ed.), *The Oxford Handbook of Qualitative Research* (Oxford: Oxford University Press, 2014), 658-676; Gerald F. Hess, "Qualitative Research on Legal Education: Studying Outstanding Law Teachers," *Alberta Law Review*, Vol. 51, Issue 4 (2014), 925-940; Lisa Webley, "Qualitative Approaches to Empirical Legal Research," in Peter Cane and Herbert Kritzer (eds.), *Oxford Handbook of Empirical Legal Research* (Oxford: Oxford University Press, 2010), 926-950.

[88] *E.g.* the rights to a healthy environment, clean air, water and sanitation, housing, access to energy, information and transparency, and participation.

	ensure resilience justice in social-ecological systems, phenomena will be described in this research.
Explanatory	This research will be a continuation of descriptive research, going beyond a mere description of the analysed characteristics, to analysing and explaining why or how something is happening.[89] This explanatory research aims to understand phenomena by discovering and measuring causal relations. This study will seek to understand and explain how and why environmental rights are or are not sufficient to enhance or implement resilience justice and what other instruments can be used to remedy that insufficiency.
Deductive	A deductive approach may be employed, developing possible hypothesis based on existing theory, and then designing a research strategy to possibly test the referred hypothesis.[90] The hypothesis can be based on the reality that environmental rights are features, variables, or triggers that might contribute to the implementation or enhancement of resilience justice in urban environments, but they do not appear to be as enough effective as they were intended to when set in constitutions or statutory legal instruments. Therefore, other instruments need to be used, such as the specific mechanisms of *adaptive law*.
Exemplifiable cases	An exemplifiable case approach will be employed, in order to gather data on the protection of environmental rights, the application of adaptive instruments and the assurance of resilience justice in urban environments. Six (or even eight) contextualising legal realities/examples will be included in the study, in a merely illustrating or exemplifiable way. Apart from the federal or para-federal realities, three examples will be in the EU and other three in the US.[91]

[89] Earl R. Babbie, *The Practice of Social Research*, 11th edition (Belmont, CA: Thompson-Wadsworth, 2007).

[90] Jonathan Wilson, *Essentials of Business Research: A Guide to Doing Your Research Project* (London: SAGE Publications, 2010), 7.

[91] It is not exactly a case-study approach, because it would need more empirical features. However, this approach is an adaptation of it, in order to better demonstrate characteristics of different legal frameworks, which can give important inputs for the final conclusions regarding the use or implementation of adaptive legal mechanisms.

Inductive	An inductive approach will be employed, which is common in many qualitative research projects, particularly case studies, where researchers make broad generalizations from specific observations.[92] The mentioned approach provides the opportunity to use the illustrations to find more grounded interpretation and robust explanations, which are able to support a deeper understanding of the relevant characteristics of the analysed phenomena. If the analyses of the examples are well structured, their interpretations may be guided by theory, and their underlying analytic assumptions will be more comprehensible. Then, there will be fewer logical contradictions, more explicit causal propositions, and easy to validate or invalidate.[93] The result of the illustrative analysis of the referred examples intends to allow the generation of new insights, principles or themes that relate specifically to the effectiveness of environmental rights and the achieving of resilience justice. Being best suited to exploring new phenomena or analysing previously researched realities from different points of view, the inductive approach can ease a margin of generalisation beyond the *results* on the drivers and variables of the illustrative cases/examples.[94] Actually, the research questions used in this study have helped to narrow the scope of it.

It is essential to assert that this research does not intend to formulate large generalisations, especially because the studied legal traditions are substantially different. Moreover, it also does not have any ambition to be a legal comparative study. Otherwise, a significantly longer period of research (and even funding) would have been needed, as well as a structuring of comparative tables and more

[92] Jack S. Levy, "Case studies: Types, designs, and logics of inference," *Conflict Management and Peace Science*, Vol. 25, Issue 1 (2008), 1-18; and Andrew Bennett, "Case study methods: Design, use, and comparative advantages," in Detlef F. Sprinz, and Yael Wolinsky-Nahmias (ed.), *Models, numbers, and cases: Methods for studying international relations* (Ann Arbor, MI: University of Michigan Press, 2004), 19-55.

[93] Sprinz Wolinsky-Nahmias, *Models, numbers, and cases* (2004), 19-55.

[94] Wolinsky-Nahmias, *Models, numbers, and cases* (2004), 19-55.

comprehensive and exhaustive explanations would have to be formulated. In fact, this study is from the beginning based on mere contextualising realities or examples of legal frameworks and urban realities. The aim of the research only consists of mapping the current reality, through an exemplifiable analysis of a number of different contextualising realities, in disparate places (the US and its states; and the EU and its Member States), in order to suggest a more widespread use of increasing flexible and adaptive legal (and community-based) tools, in order to facilitate and ease the implementation or enhancing of resilience justice in different territories and communities (especially in urban environments) around the world.

The main focus of the research is within the context of the "Global North", and more specifically in the urban realities of the US and the EU. Actually, this intends to be an alert and also a humble contribution for legal professionals, researchers and students (or other professionals interested in urban social-ecological resilience and justice, such as political and technical decision- and law-makers) to improve governance and legal systems for them to be more flexible and adaptive, to face climate change. And this needs to happen not only in the usually considered developing regions (known as the "Global South"), but also in the more developed regions of the world, where exposure to the phenomena of climate change, uncertainty, instability, and inequality also exist and must be faced seriously.[95]

[95] Kamal Uddin, "Climate Change and Global Environmental Politics: North-South Divide," *Environmental Policy and Law*, Vol. 47, Ed. 3/4 (June 2017), 106-114; Salvatore Pascale et al, "Weakening of the North American monsoon with global warming," *Nature Climate Change*, Vol. 7 (2017), 806-812.

3.2. Selecting illustrative examples

Acknowledging that resilience justice and adaptive law frameworks, namely those introduced by Arnold, have started to be applied to the reality of US jurisdictions, it makes sense that part of the selected examples are located in the territory of the US.[96] At the same time, this research intends to bring the discussion of these ideas and frameworks to the European legal research arena. Thus, choosing EU realities and jurisdictions, as well as their different and specific social-ecological characteristics was another option.

The selected examples of legal frameworks in the EU (European, Hungarian, Danish, and Portuguese laws) and the other frameworks in the US (Federal, Pennsylvania, Washington state, and Florida) intend to correspond to a possible contextualisation of the different legal realities of frameworks in both sides of the Atlantic (within the context of the "Global North"),[97] with exemplar and similar (or not) characteristics, under their respective regional and constitutional frameworks and, theoretically, in relatively different stages regarding environmental protection and resilience justice achievement.[98]

When choosing the illustrative legal frameworks, the main goal was, therefore, to find different frameworks and contexts (both in the EU and the US) that could demonstrate to have achieved more or less environmental performance and social protection (or quality of life) and, apparently, resilience justice. This starting point only corresponds to apparent levels of performance of states and

[96] See Boamah and Arnold, "Assemblages of Inequalities and Resilience Ideologies in Urban Planning" (in press); Arnold, "Adaptive Law" (2018), 169-186; Arnold and Gunderson, "Adaptive Law and Resilience" (2013), 10429.

[97] The option of focusing this research on the "Global North" intends to be a contribution to the improvement of the existing law and governance frameworks and contexts of developed countries. This may also influence future changes in law and governance frameworks within the context of the "Global South," as it happens in several situations.

[98] On the process of case selection, see Judith A. Layzer, *Natural Experiments: Ecosystem-Based Management and the Environment*, 33-34.

cities which are presumptive suggestions, based on publicly available data and information.[99]

Environmental protection and resilience justice are not the same thing. In some cases, there might be even an inverse relationship between the two phenomena. Disparate territories and cities are very often under different conditions. They are under jurisdictions that may treat environmental rights in different ways. And relative environmental protection is also different.

Although it is acknowledged that environmental performance is not a measure of resilience justice, this consists of the method of selecting mere examples of frameworks.

In this sense, this could be a common sense anecdotal and extremely simplified induction, based on a large (but always incomplete) number of different indexes and studies, could suggest a presentation of Table 3 (below), regarding a possible and apparent environmental performance of three European and three North-American cities urban realities.[100] Environmental performance and quality of life would be used here as a starting point to evaluate resilience justice.

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[99] See, for example, the data made available by "Numbeo" <https://www.numbeo.com/pollution/> (accessed on 2019.12.28). Additionally, even the levels of performance (or quality of life) may not equally correspond to the levels of resilience justice. Also see the "Environmental Performance Index" <https://epi.envirocenter.yale.edu/> (accessed on 2019.12.28). For natural environment, see the "*US News* ranking." <https://www.usnews.com/news/best-states/rankings/natural-environment> (accessed on 2019.12.28). For indicators, see Simon Bell and Stephen Morse, *Sustainability Indicators: Measuring the Immeasurable?* (London: Earthscan, 2008). Actually, other examples could have been chosen. No option is absolutely optimal or perfect. However, as it was already clarified, this study does not intend to be a comparative analysis, but only and exemplificative or contextualising research work. And according to the context, indicators, and possible variables publicly available and hereby presented, the examples studied demonstrate to be a number of the more adequate references to be taken into account in a study with the characteristics and size of this research.

[100] Several studies on the performance of cities are released in a regular periodicity. As examples, see Zachary A. Wendling et al, *Environmental Performance Index* (New Haven, CT: Yale Center for

Table 3: Exemplified apparent or presumptive levels of environmental performance, based on the development of state and/or local environmental legislation and governance

EU Member States	Performance	US States	Performance
Denmark	++	Florida	+
Hungary	-/+	Pennsylvania	-/+
Portugal	+	Washington state	++

[Key: -- very weak levels of environmental performance (EP); - weak level of EP; -/+ sufficient or satisfying level of EP; + strong level of EP; ++ very strong level of EP]

Environmental Law & Policy, 2018) <https://epi.envirocenter.yale.edu/downloads/epi2018reportv06191901.pdf> (accessed on 2019.12.28); European Commission, *In-Depth Report: Indicators for Sustainable Cities*, Science for Environment Policy, Issue 12 (Luxembourg: Publications Office of the European Union, 2018) <http://ec.europa.eu/environment/integration/research/newsalert/pdf/indicators_for_sustainable_cities_IR12_en.pdf> (accessed on 2019.12.28); Kevin Ka-Lun Lau et al, "Defining the environmental performance of neighbourhoods in high-density cities," *Building Research & Information*, Vol. 46, Issue 5 (2018), 540-551; European Commission, *The State of European Cities 2016: Cities leading the way to a better future* (Luxembourg: Publications Office of the European Union, 2016) <https://ec.europa.eu/regional_policy/sources/policy/themes/cities-report/state_eu_cities2016_en.pdf> (accessed on 2019.12.28); Kees (Bastiaan) Zoeteman et al, "Towards Sustainable EU Cities: A quantitative benchmark study of 114 European and 31 Dutch cities," Document Number: 16.142 (Tilburg: Telos – Brabant Centre for Sustainable Development, 2016) <https://pure.uvt.nl/ws/portalfiles/portal/13611754/16142_85537_UvT_EU_Study_3_gecorrigeerd_def_RM_1_.pdf> (accessed on 2019.12.28); A. Martos et al, "Towards successful environmental performance of sustainable cities: Intervening sectors. A review," *Renewable and Sustainable Energy Reviews*, Vol. 57 (May 2016), 479-495; Lyudmila P. Bakumenko et al, "The Approach to Major Cities Environmental Performance Measurement," *Mediterranean Journal of Social Sciences*, Vol. 6, No. 3, S7 (2015), 333-344. See also the *Urban Environment and Social Inclusion Index*, which is developed by the Data-Driven EnviroPolicy Lab (Data-Driven Lab), based at Yale-NUS College, Singapore, and Yale University's School of Forestry and Environmental Studies. It evaluates features such as air pollution, climate, income, tree cover, climate policy, transportation, water, and equity <http://datadrivenlab.org/urban/> (accessed on: 2019.12.28).

Actually, the first thing to address, at this point, is the difference between environmental performance indexes[101] or scores and resilience justice.

The examples of legal frameworks were (in part) selected on their relative differences in environmental performance based on reported indexes or scores for overall or aggregate environmental performance of these cities. There would be three reasons for this.

First, in this dissertation environmental rights and environmental laws in the urban context are being studied, and therefore environmental performance of cities is relevant to the effects of environmental rights and laws. Presumably, those rights and laws exist in order to protect or guarantee certain environmental outcomes for the residents in cities or urban environments.

Moreover, the relationships between environmental rights and resilience justice necessarily will emphasise equity in the urban residents' environmental conditions and capacities, even if they consider other factors, such as economic, housing, or social conditions and capacities. Environmental performance indexes or scores are good available indicia of urban conditions and characteristics for the selection of examples, even if further work needs to be done to identify and assess variables affecting resilience justice, which this dissertation intends to do.

Second, the fact that there are relative variations in environmental performance or conditions in cities that all may fall within the same legal regime (in the EU legal frameworks for European cities and, on the other hand, in the US federal law for US cities, or under frameworks of countries or supranational organisations which have signed, adhered and ratified international instruments) demonstrates that environmental laws and rights cannot be the sole determinant

[101] For a deeper analysis of urban environmental performance, see Sophie Legras and Jean Cavailhès, "Environmental performance of the urban form," *Regional Science and Urban Economics*, Vol. 59 (July 2016), 1-11.

of how much environmental protection a city or urban environment may provide to its people. This does not necessarily mean that there are variations in resilience justice among cities, but it certainly suggests that it might be possible.

Third, the existence of cities with relatively high environmental performance but few formal environmental rights and cities with relatively low environmental performance but formal environmental rights suggest that formal environmental rights are not sole determinants (or causes) of environmental conditions in cities.

Again, environmental performance and resilience justice are not the same thing, but the variations among cities in environmental performance and forms of environmental rights certainly form a fertile ground for research in the potential for variation in resilience justice among cities. If this study was only about territories with high environmental performance and strong environmental rights and/or only those with low environmental performance and weak environmental rights, it would be difficult to determine the relationships between these two variables on one hand and the conditions or indicia of resilience justice on the other hand.

Nonetheless, urban environmental performance is not the same thing as resilience justice in cities, and they are not measured the same ways. Environmental performance indexes or scores are aggregates for an entire city, whereas resilience justice is concerned with variation within a city, including inequalities across communities or populations in conditions, capacities, and vulnerabilities (similar in concept to the right to the city in this respect).

Furthermore, environmental conditions, capacities, and vulnerabilities are important variables in whether urban territories and communities are resilient and adaptive, but they are not the only variables. Economic, social, and political variables are also important to community resilience and vulnerability,

according to many studies.[102] Nevertheless, this research and the resulting dissertation are only a modest analysis and contribution for improving the status of social-ecological resilience in cities. It does not intend to find the solutions, but a number of solutions, which can be complementary to those that already exist.

3.3. Possible limitations and dilemmas

The initial research could have been focused on broader realities and not specifically oriented to urban environments. However, cities have been demonstrating to be increasing important territories of the world and (due to their complexity) major contributors to complexity, uncertainty, instability, and inequality, as it will be demonstrated further in this dissertation. For the movement of urban sprawl and for the growing relevance of megacities, which is recognised by different studies all over the globe, the choice of focusing specifically in the reality of cities became easier while this research was being developed.[103] This does not mean that a large amount of the problems and solutions hereby introduced and discussed could not be applied to rural areas, with the correct adaptations. Nevertheless, for their rising dimension, it is undoubtable that urban environments deserve a special attention from law and governance research. This research intends to be a step forward in that direction.

A possible comparative study of different regimes and specific local frameworks in cities in the US and the EU was initially considered. However, the time dedicated to a PhD and specifically to a funded doctoral research in exclusive

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[102] Anna Grear, "Foregrounding vulnerability: materiality's porous affectability as a methodological platform," in Philippopoulos-Mihalopoulos (ed.), *Research Methods in Environmental Law* (2017), 3-28.

[103] See OECD, *The Metropolitan Century: Understanding Urbanisation and its Consequences* (Paris: OECD Publishing, 2015) <https://www.oecd-ilibrary.org/urban-rural-and-regional-development/the-metropolitan-century_9789264228733-en> (accessed on 2020.02.10).

dedication cannot be illimited, as well as the length of the dissertation. More intensive fieldwork (and even more years) would have been needed for the studies and conclusions to be sharpened. Therefore, choices had to be made and the final option ended to be an exercise of mapping, finding, and introducing a number of specific examples of legal frameworks in order to humbly contextualise the topic and issues in analysis and find an assortment of contributions for more general realities. For these reasons, a number of remaining sources and materials have been collected, which will certainly be useful for future research and scholarly papers to be developed and published further on.

The studies and the conclusions hereby presented are, nevertheless, based on a broad number of literature and legal systems, giving a fairly reasonable and consistent overview of different legal and urban realities in disparate places, especially from international and US and EU perspectives.

4. Road map

This dissertation is divided into eight chapters, including this introductory part and a conclusion chapter. The second chapter describes the current social-ecological problems which could be found in today's urban areas, and their connection with complexity, uncertainty, instability, and inequality, as well as with the major issue of climate change. The third chapter intends to present an analysis of what could be characterised as a general (though not exhaustive) theory of environmental rights, with its framings, contents, sources, and some examples. In the fourth chapter, what was previously described about environmental rights will be evaluated in light of the needs for resilience justice, through examples of the characteristics of the different concepts. The fifth chapter will present adaptive law as a specific complementary tool to achieve resilience justice and make environmental rights more effective, through a description of

possible adaptive mechanisms of public law. A part of this dissertation is dedicated to the relevance of collective or community action for addressing urban vulnerabilities will consist of the sixth chapter. The seventh chapter intends to formulate an adaptive framework for resilience justice, in order to face uncertainty and vulnerabilities in cities, through adaptive legal solutions, making the protection of environmental rights more effective.

This dissertation terminates in chapter eight with the presentation of conclusions and future perspectives on the protection of environmental rights and the utilisation of legal adaptive mechanisms in order to achieve resilience justice, in both the EU and the US urban environments.

Chapter II – The environment in the city and social-ecological uncertainty

1. Environmental uncertainty and instability in the era of cities

The environmental uncertainties and instabilities of cities and deep social inequalities in cities pose substantial problems for urban legal and governance regimes. According to the findings of the United Nations Human Settlements Programme (UN-Habitat):

> "From earthquakes to flooding, rapid immigration to cyber-attacks, all cities face a range of shocks and stresses, natural and human-made. Today, our cities and citizens are facing new and amplified challenges as a result of rapid urbanization, a changing climate and political instability.
>
> These phenomena increase increases the population's exposure and vulnerability to hazards and can trigger or worsen disasters. Further stress is placed on our urban areas as the effects of climate change become more severe and frequent.
>
> In order to mitigate these shifts and reduce the negative impact they have on people, the global community is increasingly realizing that we need to build resilience into our cities by empowering and strengthening the capabilities of local government and their partners, including local populations."[104]

In the following sections of this dissertation, urban problems regarding vulnerabilities, uncertainty, and instability will be analysed in order to find new solutions and mechanisms for both law and governance to implement and tackle them in the future.

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[104] UN-Habitat, *City Resilience Profiling Tool* (Barcelona: Urban Resilience Hub, 2018), 13 <http://urbanresiliencehub.org/wp-content/uploads/2018/10/CRPT-Guide-Pages-Online.pdf> (accessed 2019.12.28). Also emphasising these ideas, see Danan Gu et al, "Risks of Exposure and Vulnerability to Natural Disasters at the City Level: A Global Overview," Technical Paper No. 2015/2, Population Division (United Nations: New York, 2015) <https://population.un.org/wup/Publications/Files/WUP2014-TechnicalPaper-NaturalDisaster.pdf> (accessed on 2019.12.28).

1.1. Increasing relevance of urban areas

Since the industrialisation movement in the 18th century, due to technological progress and more availability of employment in cities than in countryside, urban places have been growing rapidly for the last centuries, both in size and in number.[105] However, for the last decades, urban sprawl has been increasing in the world at an unprecedented pace.[106]

This increase can be demonstrated by the following factors: (a) population growth in cities; (b) the space taken by urban development (which would be strictly considered as urban sprawl); and (c) the concentration of people in urban areas.[107] Simultaneously, cities are more and more playing a paramount role in

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[105] Jonathan Rees, "Industrialization and Urbanization in the United States, 1880-1929," in John Butler (ed.), *Oxford Research Encyclopedia of American History* (New York: Oxford University Press, 2016), 1-15 <https://oxfordre.com/americanhistory/view/10.1093/acrefore/9780199329175.001.0001/acrefore-9780199329175-e-327?rskey=rQ9qbK&result=1> (accessed on 2019.12.28); Gregory Clark, *A Farewell to Alms: A Brief Economic History of the World* (Princeton, NJ: Princeton University Press, 2007), 272-299; E. Anthony Wrigley, "Urban Growth and Agricultural Change: England and the Continent in the Early Modern Period," *Journal of Interdisciplinary History*, Vol. 15 (1985), 683-728; E. Anthony Wrigley and R. S. Schofield, *The Population History of England, 1541-1871. A Reconstruction* (London: Edward Arnold Publishers, 1981), 531-4.

[106] See WUP (2018).

[107] State of Washington, *2018 Population Trends*, Forecasting & Research Division (Olympia, WA: Office of Financial Management, July 2018) <https://www.ofm.wa.gov/sites/default/files/public/dataresearch/pop/april1/ofm_april1_poptrends.pdf> (accessed on 2019.12.28); American Society of Landscape Architects, "New Maps Show How Urban Sprawl Threatens the World's Remaining Biodiversity," *The Dirt: Uniting the Built & Natural Environments* (2018) <https://dirt.asla.org/2018/02/06/new-maps-show-how-urban-sprawl-threatens-the-worlds-remaining-biodiversity/> (accessed on 2019.12.28); Shima Hamidi et al, "Associations between Urban Sprawl and Life Expectancy in the United States," *International Journal of Environmental Research and Public Health*, Vol. 15, Issue 5 (2018), 861; Linda Poon, "Mapping the 'Conflict Zones' Between Sprawl and Biodiversity," CityLab (2018) <https://www.citylab.com/environment/2018/02/mapping-the-conflict-zones-between-sprawl-and-biodiversity/553301/> (accessed on 2019.12.28); Ivan Tosics, "Densification beyond the city centre: urban transformation against sprawl," *Urbact – Driving Change for Better Cities*, EU-ERDF (2017) <http://urbact.eu/densification-beyond-city-centre-urban-transformation-against-sprawl> (accessed on 2019.12.28). See also UN Economic and Social Council, *Sustainable cities, human*

the global economy.[108] Moreover, cities have also been presented as examples or references of governance and social organization, for good or worse.[109]

For millennia, large numbers of human beings have always tried to gather themselves in local communities. Those settlements became later urban communities, until the current reality of towns and cities. An increasing number of cities shelter 10 million or more dwellers (the so-called "megacities"). According to the UN, by 2030, 43 cities around the globe will be considered as "megacities".[110] And this reality will also have significative impacts on the environment and climate.[111]

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mobility and international migration Report of the Secretary-General, Commission on Population and Development, Fifty-first session, 9-13 April 2018 (E/CN.9/2018/2) <http://www.un.org/en/development/desa/population/pdf/commission/2018/documents/AgendaItem3/E_CN.9_2018_2_AdvanceUnedited.pdf> (accessed on 2019.12.28).

[108] UN-Habitat, *The Economic Role of Cities*, The Global Urban Economic Dialogue Series (Nairobi: UN-Habitat, 2011); McKinsey Global Institute, *Urban America: US cities in the global economy* (McKinsey & Company, April 2012). More and updated information on this issue is available on the website of UN-Habitat <https://unhabitat.org/urban-themes/economy/> (accessed on 2018.11.16).

[109] Simon Joss, "Future cities: asserting public governance," *Palgrave Communications*, Vol. 4, Issue 36 (2018); P. Grindrod and T. E. Lee, "Comparison of social structures within cities of very different sizes," *Royal Society of Open Science*, Vol. 3, Issue 2 (February 2016), 150526; Iván Tosics, "Governance challenges and models for the cities of tomorrow," Metropolitan Research Institute, Budapest, Issue paper commissioned by the European Commission – Directorate General for Regional Policy (January 2011) <http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/citiesoftomorrow/citiesoftomorrow_governance.pdf> (accessed on 2019.12.28); William L. Kolb, "The Social Structure and Functions of Cities," *Economic Development and Cultural Change*, Vol. 3, No. 1, The Role of Cities in Economic Development and Cultural Change, Part 1 (October 1954), 30-46.

[110] See the United Nations' 2018 Revision of World Urbanization Prospects, from the UN Department of Economic and Social Affairs <https://www.un.org/development/desa/publications/2018-revision-of-world-urbanization-prospects.html> (accessed on 2019.12.28).

[111] Miriam E. Marlier et al, "Extreme Air Pollution in Global Megacities," *Current Climate Change Reports*, Vol. 2, Issue 1 (March 2016), 15-27.

1.1.1. Causes of urbanisation

The reality of urbanisation and the expansion of cities has been occurring for two specific reasons, which are the natural increase of population and migration from rural to urban areas. Simultaneously, the natural increase of population in cities happens when the number of births exceeds the number of deaths.[112]

In fact, this phenomenon understood as urbanisation happens very often when populations move from rural villages to settle in urban environments, hoping to improve their standard of living.[113]

This usual movement of populations from one place to another is named migration. It is a movement that is very often influenced by economic growth and development, but also by technological novelties and, in some cases, by political and social conflict and disruption.[114] Nevertheless, urbanisation has been driven by pull and push factors that attract people to urban areas or drive people away from the countryside, respectively.[115]

Opportunities for employment in urban areas are one of the most popular pull factors for urbanisation and migration. A large number of industries are located

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[112] See Population Reference Bureau, Focus Area – Population Change (July 1, 2019) <https://www.prb.org/humanpopulation/> (accessed on 2019.12.28).

[113] Daniel T. C. Cox et al, "The impact of urbanisation on nature dose and the implications for human health," *Landscape and Urban Planning*, Vol. 179 (Nov. 2018), 72-80; European Commission, *Continuing Urbanisation* (2018) <https://ec.europa.eu/knowledge4policy/foresight/topic/continuing-urbanisation_en> (accessed on 2019.12.28); and International Institute for Environment and Development, *Introduction to urbanisation and rural-urban linkages* (02 Sep. 2014) <https://www.iied.org/introduction-urbanisation-rural-urban-linkages> (accessed on 2019.12.28).

[114] About migration and human rights, and with a more specific focus on immigration, see Ana Rita Gil, *Imigração e Direitos Humanos* (Lisboa: Petrony, 2017).

[115] Nicholas Van Hear et al, "Push-pull plus: reconsidering the drivers of migration," *Journal of Ethnic and Migration Studies*, Vol. 44, Issue 6 (2018), 927-944; Mathilde Maurel and Michele Tuccio, "Climate Instability, Urbanisation and International Migration," *The Journal of Development Studies*, Vol. 52, Issue 5 (2016), 735-752; and Douglas Gollin et al, "Urbanization with and without industrialization," *Journal of Economic Growth*, Vol. 21, Issue 1 (March 2016), 35-70.

in cities and around them, offering more opportunities than rural areas for high urban salaries. Other characteristic of cities regards the existence of more educational institutions, such as schools, colleges, and universities, which provide a wider range of courses and training than in countryside. Populations are, therefore, attracted to the lifestyle and the appealing "bright lights" of city life.[116] These are the main factors that can result in both temporary and permanent migration to urban areas and environments.[117]

At the same time, the poor living conditions and the few employment opportunities are the most relevant push factors. Rural inhabitants also move away from countryside due to poor health care conditions and to lack of educational services or infrastructures, as well as to economic difficulties. Environmental changes, droughts, floods, lack of availability of sufficiently productive land, and other pressures on rural livelihoods are other increasing push factors for rural exodus and consequent urbanisation.[118]

Migration from rural to urban areas can be seen as a selective process. In fact, some people are more likely to move than others, depending of different factors

[116] Daniel Kübler et al, "Bright Lights, Big Cities? Metropolisation, Intergovernmental Relations, and the New Federal Urban Policy in Switzerland," *Swiss Political Science Review*, Vol. 9, Issue 1 (April 2003), 261-282.

[117] Vicente Royuela, "The role of urbanisation on international migrations: a case study of EU and ENP countries," *International Journal of Manpower*, Vol. 36 No. 4 (2015), 469-490.

[118] Sylvia Szabo et al, "Is Rapid Urbanisation Exacerbating Wealth-Related Urban Inequalities in Child Nutritional Status? Evidence from Least Developed Countries," *The European Journal of Development Research*, Vol. 30, Issue 4 (September 2018), 630-651; Mohamed Hilal et al, "Peri-Urbanisation: Between Residential Preferences and Job Opportunities," *Raumforschung und Raumordnung | Spatial Research and Planning*, Vol. 76, Issue 2 (April 2018), 133-147; Lezlie Morinière, "Environmentally Influenced Urbanisation: Footprints Bound for Town?," *Urban Studies*, Vol. 49, Issue 2 (2011), 435-450; and Amitabh Kundu, "Urbanisation and Urban Governance: Search for a Perspective beyond Neo-Liberalism," *Economic and Political Weekly*, Vol. 38, No. 29 (Jul. 19-25, 2003), 3079-3087.

and conditions.[119] Gender can be one of the factors involved. In a large number of cases, employment opportunities are different both for men and women. Another factor or condition is the age of migrants. Young populations are more likely to choose urban areas to live in. Simultaneously, more elderly people and children are left in rural environments, because they do not look for jobs (both anymore or yet). For a long time, selectivity in migration has been affecting the population in both rural and urban places. This meant that, if more men moved to towns and cities than women, a predominantly female society was usually left in rural areas. However, with more gender equality, this trend has been reduced in recent years.[120]

1.1.2. Impacts of urbanisation

Populations are naturally pulled towards the advantages of cities. However, the phenomenon of urbanisation has mixed impacts, from the opportunities for employment to the challenges created by rapid unplanned urban growth, such as unequal access to housing or a healthy environment.[121]

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[119] Vladimir Baláž et al, "Migration Decision Making as Complex Choice: Eliciting Decision Weights Under Conditions of Imperfect and Complex Information Through Experimental Methods," *Population, Space and Place*, Vol. 22, Issue 1 (January 2016), 36-53.

[120] On this issue, see Xavier Lemaire and Daniel Kerr, *Gender and Inclusive Urbanisation* (London: UCL Energy Institute/SAMSET, 2017). For all, see "Study Session 5 – Urbanisation: Trends, Causes and Effects," WASH: Context and Environment, Open Learn Create, The Open University <http://www.open.edu/openlearncreate/mod/oucontent/view.php?id=79940> (accessed on 2019.12.28).

[121] See Patrick Le Galès, "Urban political economy beyond convergence: Robust but differentiated unequal European cities," in Alberta Andreotti, David Benassi, and Yuri Kazepov (eds.), *Western capitalism in transition: Global processes, local challenges* (Manchester: Manchester University Press, 2018), 217-236; Sylvie Fanchette et al, "Peri-urban villages: unequal access to land for construction," in Sylvie Fanchette (ed.), *Hà Nội, a Metropolis in the Making: The Breakdown in Urban Integration of Villages* (Bondy: IRD Éditions, 2018), 121-138; Judhajit Chakraborty, "An Unequal Process of Urbanisation," *Economic & Political Weekly*, Vol. LII, No. 9 (March 4, 2017), 90-94; Marcos Luna, "The Geography of Separate and Unequal: Modern-day Segregation in Boston"

Prosperous urban areas are relevant elements of wealthy national economies. The gathering of economic and human resources in one specific territory naturally stimulates innovation and development in business, science, technology and various industries. Access to education, health, social services and even cultural activities, such as museums, theatres, cinemas, or exhibitions, is more readily available to populations living in cities and towns than to those living in rural villages, far from urban environments. Simultaneously, child survival rates are higher in cities than in rural areas due to better and broader access to health care.[122]

It is also easier and less costly for governments and utilities' providers to offer and deliver essential goods and services, because of the larger density of urban populations. The effort and cost per person for supplying basic facilities in cities such as fresh water and electricity is also more reduced, due to the scale differences between urban and rural areas.[123]

At the same time, educational facilities such as schools, colleges and universities are usually established in cities, to make available a larger variety of educational courses and develop human resources in more central locations, offering student populations a wide choice for their careers.

Moreover, citizens belonging to different social classes and religions live and work together in cities, creating better understanding and harmony and helping

(November 14, 2016) <https://works.bepress.com/marcos-luna/40/> (accessed on 2019.12.28); and Greg Clarke et al, "Divergent cities? Unequal urban growth and development," *Cambridge Journal of Regions, Economy and Society*, Vol. 9, Issue 2 (July 2016), 259-268.

[122] E.K. Mulholland et al, "Equity and child-survival strategies," *Bulletin of the World Health Organization*, Vol. 86 (2008), 399-407.

[123] M.P. Brockerhoff, "An Urbanizing World," *Population Reference Bureau*, Vol. 55 (2000), 1-48.

break down social and cultural barriers.[124] Communication and transit networks are also more advanced in urban areas.[125]

Nevertheless, all these apparent benefits do not apply to the global population in urban environments. Fast population increases and unplanned changes create negative economic, social, and environmental consequences. Inequality in the access to housing, water supply and sanitation, waste treatment and pollution (water quality, solid waste, or air quality), health, food, economic and social systems are, therefore, a permanent reality in urban environments.[126]

Throughout scholarship works, it is possible to find studies providing empirical evidence that helps to answer several key questions relating to the extent of urban sprawl in different continents.

For example, focusing on the European continent, Oueslati et al decided to build on the monocentric city model in order to elaborate a study that used existing data sources to derive a set of panel data for 282 European cities at three time points (1990, 2000 and 2006). The authors concluded that there were major changes in artificial area and in the levels of urban fragmentation.[127]

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[124] Jerome Krase, "Seeing Diversity in New York City," in Jerome Krase (ed.), *Seeing Cities Change: Local Culture and Class* (London: Routledge: 2016), 31-61; Ali Madanipour, "Social Exclusion and Space," in Richard T. LeGates, and Frederic Stout (eds.), *The City Reader*, 6th ed. (London: Routledge, 2015), 181-188; Beatriz Padilla et al, "Superdiversity and conviviality: exploring frameworks for doing ethnography in Southern European intercultural cities," *Ethnic and Racial Studies*, Vol. 38, Issue 4: Comparing super-diversity (2015), 621-635; and Marie-Hélène Bacqué et al, *The Middle Classes and the City* (London: Palgrave Macmillan, 2015), 1-10.

[125] Barbara T.H. Yen et al, "Inter-modal competition in an urbanised area: Heavy rail and busways," *Research in Transportation Economics*, Vol. 69 (September 2018), 77-85; and Dena Kasraian et al, "The impact of urban proximity, transport accessibility and policy on urban growth: A longitudinal analysis over five decades," *Environment and Planning B: Urban Analytics and City Science*, Vol. 46, Issue 6 (November 2017), 1000-1017.

[126] See "Study Session 5 – Urbanisation: Trends, Causes and Effects," WASH: Context and Environment, Open Learn Create, The Open University.

[127] Walid Oueslati et al, "Determinants of urban sprawl in European cities," *Urban Studies*, Vol. 52, Issue 9 (July 2015), 1594-1614.

In European is possible to find one of the highest densities of urban settlement in the whole world. Over 75% of the population in Europe live in urban areas.[128] Even if population has not been growing so much in Europe, an uneven expansion of urban areas still is happening across the whole continent. Many European cities are increasing at fast pace and there is no sign that this trend is slowing down. As a result, the demand for land around urban environments is becoming a critical issue in many areas.[129]

Regarding the case of the US, urban sprawl is considered as one of the key planning issues today. Focusing on anti-sprawl policies, the US is known for its settlement patterns that intend to emphasise low-density suburban development and extreme automobile dependence, whereas European countries emphasise higher densities, pro-transit policies and more compact urban growth. Nevertheless, if the cases are better analysed, the differences between the two realities are not as wide as they first appear to be. Actually, both European and

[128] Edward Glaeser and J. Vernon Henderson, "Urban economics for the developing World: An introduction," *Journal of Urban Economics*, Vol. 98 (March 2017), 1-5; Luís M. A. Bettencourt and José Lobo, "Urban scaling in Europe," *Journal of the Royal Society Interface*, Vol. 13, Issue 116 (31 March 2016), 1-14 <https://royalsocietypublishing.org/doi/full/10.1098/rsif.2016.0005> (accessed on 2019.12.28); Ernest I. Hennig et al, "Multi-scale analysis of urban sprawl in Europe: Towards a European de-sprawling strategy," *Land Use Policy*, Vol. 49 (December 2015), 483-498; Dani Broitman and Eric Koomen, "Residential density change: Densification and urban expansion," *Computers, Environment and Urban Systems*, Vol. 54, (November 2015), 32-46; and Kurt Schmidheiny and Jens Suedekum, "The pan-European population distribution across consistently defined functional urban areas," *Economics Letters*, Vol. 133 (August 2015), 10-13.

[129] European Environment Agency, *Urban sprawl in Europe: Joint EEA-FOEN report* (Luxembourg: Publications Office of the European Union, 2016) <https://www.eea.europa.eu/publications/urban-sprawl-in-europe> (accessed on 2019.07.23); European Environment Agency, *Urban sprawl in Europe: The ignored challenge*, EEA Report No. 10/2006 (Luxembourg: Publications Office of the European Union, 2006) <https://www.eea.europa.eu/.../eea.../eea_report_10_2006.pdf> (accessed on 2019.07.23).

North American continents can offer each other useful policy and legal insights and possible guidance for future solutions.[130]

A large part of urban areas in the US have been characterised by containment. It is, in fact, an attempt to confront the reasonable development needs of the community, region, or state. At the same time, urban containment intends to accommodate those different realities in a way that can preserve public goods and minimise fiscal burdens. It can also minimise adverse interactions between land uses while maximising other positive interactions, intending to improve the equitable distribution of the benefits of growth, and enhancing quality of life.[131]

According to Nelson, the main purpose of urban containment is to "choreograph" public infrastructure investment, land use and development regulation, and deployment of incentives and disincentives to influence the rate, timing, intensity, mix, and location of growth. This means that urban containment programmes are distinguished from traditional approaches to land use regulation by the necessary inclusion of policies (and even legislation) that are specifically designed to limit the development of land outside the already determined limits of an urban area, while encouraging the development and redevelopment within those limits.[132]

More generally, from a global perspective, it is possible to conclude that the movement of urbanisation has serious social consequences, such as inequality,[133]

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[130] See, for all, Harry W. Richardson and Chang-Hee Christine Bae (eds.), *Urban Sprawl in Western Europe and the United States* (London: Routledge, 2017).

[131] Arthur C. Nelson, "Urban Containment American Style: A Preliminary Assessment," in Richardson, and Bae (eds.), *Urban Sprawl in Western Europe and the United States* (2017), 237-253.

[132] Nelson, "Urban Containment American Style: A Preliminary Assessment" (2017), 237-253.

[133]Juan Pablo Chauvin et al, "What is different about urbanization in rich and poor countries? Cities in Brazil, China, India and the United States," *Journal of Urban Economics*, Vol. 98 (March 2017), 17-49; and Richard Child Hill, "Capital Accumulation and Urbanization in the United States," in Robert W. Lake (ed.), *Readings in Urban Analysis: Perspectives on Urban Form and Structure* (New York: Routledge, 1983), 228-249.

and ecological problems such as air pollution,[134] changes in flood trends,[135] or even salinization and alkalinisation of fresh water.[136]

1.1.3. The role of UN-Habitat

Mainly for the mentioned social-ecological reasons, the United Nations General Assembly established the United Nations Habitat and Human Settlements Foundation (UNHHSF), on 1 January 1975, as the first official UN body dedicated to urbanisation. Under the umbrella of the United Nations Environment Programme (UNEP), the mission of this foundation was to assist national programmes relating to human settlements through the provision of capital and technical assistance, particularly in developing countries. However, the UNHHSF was only given an initial budget of 4 million US dollars for a total period of four years.[137]

At the time, international awareness on urbanisation and its impacts was not as prominent in the UN agenda as it is today. Although urban sprawl was already a reality around the planet, two-thirds of human beings still lived in rural areas.[138]

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[134] Christopher Carlsten, and Christopher F. Rider, "Traffic-related air pollution and allergic disease: an update in the context of global urbanization," *Current Opinion in Allergy and Clinical Immunology*, Vol. 17, Issue 2 (April 2017), 85-89; and Gennaro D'Amato et al, "Climate Change and Air Pollution: Effects on Respiratory Allergy," *Allergy Asthma Immunol Research*, Vol. 8, Issue 5 (September 2016), 391-395.

[135] G.A. Hodgkins et al, "Effects of climate, regulation, and urbanization on historical flood trends in the United States," *Journal of Hydrology*, Vol. 573 (June 2019), 697-709; and Jacob A. Napieralski, and Thomaz Carvalhaes, "Urban stream deserts: Mapping a legacy of urbanization in the United States," *Applied Geography*, Vol. 67 (February 2016), 129-139.

[136] S. Kaushal et al, "Urbanization accelerates long-term salinization and alkalinization of fresh water," *American Geophysical Union* (Dec. 2017), GC14C-04 <https://ui.adsabs.harvard.edu/abs/2017AGUFMGC14C..04K> (accessed on 2019.12.28).

[137] See the UN-Habitat webpage <https://unhabitat.org/history-mandate-role-in-the-un-system/> (accessed on 2019.12.28).

[138] UN-Habitat webpage.

Therefore, the first international UN conference to fully recognise urbanisation as an emerging global challenge was held in 1976 in Vancouver, Canada. This conference, which was named Habitat I, resulted in the creation, on 19 December 1977, of the precursors of the United Nations Commission on Human Settlements (an intergovernmental body) and the United Nations Centre for Human Settlements (commonly referred to as "Habitat"), which served as the executive secretariat of the already mentioned Commission.[139]

Habitat was also mandated to manage the UNHHSF funds. Between 1978 and 1996, with scarce financial and political support, Habitat struggled to prevent and to address problems caused by massive urban growth, particularly in developing countries. In 1996, the United Nations held a second conference on urban issues (Habitat II) in Istanbul, Turkey to assess two decades of progress since Habitat I in Vancouver and to set fresh goals for the challenges of the new millennium. The *Habitat Agenda* was adopted by 171 countries, as a political document which came out of this "city summit" and contained over 100 commitments and 600 recommendations for states and cities to implement.[140]

Nevertheless, the weakness of the Habitat's associated monitoring and evaluation, and the changing dynamics of human settlements since 1996 demonstrated that new international action and solutions would be needed for urban social and ecological problems worldwide.[141]

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[139] UN-Habitat webpage.

[140] See the Report of the United Nations Conference on Human Settlements (Habitat II) (Istanbul, 3-14 June 1996) <https://www.un.org/ruleoflaw/wp-content/uploads/2015/10/istanbul-declaration.pdf> (accessed on 2019.12.29).

[141] Michael A. Cohen, "From Habitat II to Pachamama: a growing agenda and diminishing expectations for Habitat III," *Environment and Urbanization*, Vol. 28, Issue 1 (2015), 35-48 <https://journals.sagepub.com/doi/full/10.1177/0956247815620978> (accessed on 2019.12.29).

1.1.4. A New Urban Agenda

In accordance to the results of the UN *World Urbanization Prospects: The 2014 Revision, Highlights* (set out in its Table I), in 1990, 43 per cent (2.3 billion) of the world's population lived in urban areas; by 2015, this number had increased to 54 per cent (4 billion). And, even at that time, UN projections already indicated that by 2050, 66 per cent of the world's population would be living in urban areas.[142]

Two years later, the UN-Habitat, while preparing the Quito Conference Habitat III, published the *World Cities Report 2016 - Urbanization and Development: Emerging Futures*.[143]

The report intended to characterise cities as a "gathering force" in the world. And the trend of a global urban growth is not new, but relentless. It has been marked by a notable increase in the absolute numbers of urban dwellers (from a yearly average of 57 million between 1990-2000 to 77 million between 2010-2015). And urban inequality and the reality of slums are still large global challenges.[144]

With these figures in mind, from 17 to 20 October 2016, the UN Conference on Housing and Sustainable Urban Development took place in Quito, Ecuador. That conference concluded with the adoption of a *New Urban Agenda*, as an action-oriented document intended to set global standards of achievement in

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[142] As an example, Portugal represented a paradigmatic example of this increase, in which the proportion of urban population was 48% in 1990, 63% in 2014 and is predicted to be 77% in 2050. On this topic, see United Nations, *World Urbanization Prospects. The 2014 Revision*, Department of Economic and Social Affairs, Population Division (New York: United Nations, 2015) <https://esa.un.org/unpd/wup/publications/files/wup2014-report.pdf> (accessed on 2018.10.18).

[143] UN-Habitat, *World Cities Report 2016 – urbanization and development: emerging futures* (New York: UN Habitat, 2016) <https://unhabitat.org/wp-content/uploads/2014/03/WCR-%20Full-Report-2016.pdf> (accessed on 2018.11.16).

[144] Sylvia Croese et al, "Towards Habitat III: Confronting the disjuncture between global policy and local practice on Africa's 'challenge of slums'," *Habitat International*, Vol. 53 (April 2016), 237-242.

sustainable urban development, rethinking the way of building, managing, and living in cities through drawing together cooperation with committed partners, relevant stakeholders, and urban actors at all levels of government as well as the private sector.[145]

This agenda was the first worldwide document of the 21st century (after the Vancouver Declaration and the Habitat Agenda) where all the states represented in the UN demonstrated to be, effectively, worried about the future of cities and put themselves together to implement measures to improve the lives of urban populations in their countries. The evidence of this commitment was the enactment of the Quito Implementation Plan, which refers to the specific commitments by various partners intended to contribute to and reinforce the implementation of the outcomes of Habitat III Conference and the *New Urban Agenda*. The voluntary commitments seek to be concrete actions, which are divided in the six thematic areas identified in the following Table 4.

Table 4: Habitat III Thematic Framework[146]

Thematic areas	1. Social Cohesion and Equity – Livable Cities
	2. Urban Frameworks
	3. Spatial Development
	4. Urban Economy
	5. Urban Ecology and Environment
	5. Urban Housing and Basic Services

[145] The Resolution was adopted by the UN General Assembly on 23 December 2016 (A/RES/71/256, 25 January 2017) <http://habitat3.org/wp-content/uploads/New-Urban-Agenda-GA-Adopted-68th-Plenary-N1646655-E.pdf> (retrieved 2019.12.29).

[146] See United Nations, *Urban Ecology and Resilience*, A/CONF.226/PC.3/21 (New York: United Nations: 2017) <http://habitat3.org/wp-content/uploads/Habitat%20III%20Policy%20Paper%208.pdf> (accessed on 2019.12.22). See also the Habitat III & New Urban Agenda webpage <http://www.habitat3.org/> (accessed on 2019.12.29).

And the mentioned actions can be measurable and achievable, focused on implementation, and with specific depth of information for future accountability and transparency. The commitment of the different actors implies emphasis to the implementation and outcomes of one or multi-stakeholders' initiatives to promote sustainable urban development rather than the common activity of the partners.

The mentioned initiatives under the Quito Implementation Plan should be characterised by the following features:

i) Specific, replicable, action-oriented, funded and innovative;
ii) Monitored and subject to reporting on a regular basis;
iii) Demonstrate the capacity to deliver;
iv) Led by partners able to showcase implementation of existing commitments (sufficient level of maturity).

For cooperative international initiatives, inclusiveness must be observed (e.g. balance regional representation). Simultaneously, these commitments are not considered as substitute solutions for Governments responsibilities and intergovernmentally agreed commitments. Actually, they are intended to strengthen implementation by involving those relevant stakeholders that can make a contribution to sustainable urban development, as stressed in the *New Urban Agenda*.[147]

The discussion around this new agenda has made it clear that most of the Sustainable Development Goals (SDG) cannot be achieved without sustainable urbanisation, and vice versa. This demonstrates that more comprehensive, multidimensional framework to facilitate the implementation of sustainable

[147] Habitat III & New Urban Agenda webpage.

urbanisation are needed in light of a new global urban agenda.[148] The *New Urban Agenda* intends to move beyond the usual sterile proclamations and acknowledge that urban policy significantly influences inclusive growth and sustainability, trying to implement a sort of "urban perestroika".[149]

Therefore, according to Parnell, after the *New Urban Agenda*, "there is no longer a question of whether cities are important for sustainable development, but rather why and how the urban condition affects our common future."[150] As a consequence of that, social-ecological resilience is also affected by urban conditions and, simultaneously, the governance and legal frameworks in urban environments play an important role in implementing resilience justice for the communities that live in those territories.

Moreover, according to the initially presented UN-Habitat indicators from 2014, which later influenced the *World Cities Report* and the *New Urban Agenda*, almost 75 per cent of the world's cities have higher levels of income inequalities, comparing to twenty years ago.[151] This reality has been caused by the increasing population around the world and, simultaneously, the gathering in larger and larger cities, namely in "megacities". Each year, more and more human beings choose to live in cities, where they are continuously forced to adapt their lives to the challenges of fast-moving urban environments, which are mainly affected by uncertainty.

Even after the approval of the *New Urban Agenda* and the beginning of its implementation by the states, inequalities are still a main problem in urban

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[148] Aromar Revi, "Afterwards: Habitat III and the Sustainable Development Goals," *Urbanisation*, Vol. 1, Issue 2 (November 2016), x-xiv.

[149] Robert M. Buckley and Lena Simet, "An agenda for Habitat III: urban perestroika," *Environment and Urbanization* 28, Issue 1 (April 2016), 64-76.

[150] Susan Parnell, "Defining a Global Urban Development Agenda," *World Development*, Vol. 78 (February 2016), 529-540.

[151] United Nations, *World Urbanization Prospects. The 2014 Revision*.

environments.[152] There is still a long way to tread regarding the reduction of inequalities within the communities who live in urban environments.

At the same time, with the problem of inequality, uncertainty and instability are also more likely to increase with the urbanisation movement. And the persistent reality of climate change has been amplifying the problems of urbanisation all over the world.[153]

1.2. Uncertainty as a continuous urban issue

Urban environments are complex and uncertain. This means that it is essential for cities to develop and have adaptive capacities.[154] This reality is due to climate change, but also because urban environments have always been characterized by uncertainty and instability since their existence. They exist as systems, they function as systems, and live in connection with other systems. Therefore, urban environments are vulnerable to possible disturbances and effects caused by other systems.[155]

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[152] On the cases of New Orleans, Detroit, San Francisco and New York, see Peter Moskowitz, *How to Kill a City: Gentrification, Inequality, and the Fight for the Neighborhood* (New York: Nation Books, 2017). See also Colin Crawford, "Access to Justice for Four Billion Urban and Environmental Options and Challenges," *New York University Environmental Law Journal*, Vol. 26, Issue 3 (2018), 340-401; and Richard Florida, *The New Urban Crisis* (2017).

[153] See Hari Bansha Dulal, "Making cities resilient to climate change: identifying "win-win" interventions," *Local Environment: The International Journal of Justice and Sustainability*, Vol. 22, Issue 1 (2017), 106-125; Jonathan Silver, "The climate crisis, carbon capital and urbanisation: An urban political ecology of low-carbon restructuring in Mbale," *Environment and Planning A: Economy and Space*, Vol. 49, Issue 7 (April 2017), 1477-1499; and David King, Yetta Gurtner, Agung Firdaus, Sharon Harwood, and Alison Cottrell, "Land use planning for disaster risk reduction and climate change adaptation," *International Journal of Disaster Resilience in the Built Environment*, Vol. 7 No. 2 (April 2016), 158-172.

[154] OECD, *Cities and Climate Change* (2010), 65.

[155] Austin Zeiderman et al, "Uncertainty and Urban Life," *Public Culture*, Vol. 27, No. 2 (2015), 281-304.

Cities are, therefore, complex, changing, and uncertain systems.[156] Urban uncertainties come, not only from disturbances derived from climate – as it is trendy to say –, but also from natural ecosystems, watersheds, communities from places other than those specific cities, economics, or technologies. Consequently, urban environments are, by nature, uncertain to people who live in and also to governments which have to manage those territories in a way to foster development, keep efficiency, people's welfare and balanced ecological environments.[157]

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[156] Maria Evangelina Filippi, "Planning in a complex, changing and uncertain urban reality: the emergence of a resilience planning paradigm in the city of Barcelona," DPU Working Paper No. 194, UCL (March 2018) <https://www.ucl.ac.uk/bartlett/development/sites/bartlett/files/wp194.pdf> (accessed on: 2019.12.29).

[157] See Ali Hamidi et al, "Uncertainty analysis of urban sewer system using spatial simulation of radar rainfall fields: New York City case study," *Stochastic Environmental Research and Risk Assessment*, Vol. 32, Issue 8 (August 2018) 2293–2308; C.R. Thorne et al, "Overcoming uncertainty and barriers to adoption of Blue-Green Infrastructure for urban flood risk management," *Journal of Flood Risk Management*, Vol. 11, Issue S2 (February 2018), S960-S972; Vinai Singh et al, "Municipal Solid Waste Management with Uncertainty Analysis for Urban Cities," in Vijay P. Singh, Shalini Yadav, and Ram Narayan Yadava (eds.), *Water Quality Management. Water Science and Technology Library,* Vol. 79 (Singapore: Springer, 2018), 385-398; Arturo Casal-Campos et al, "Reliable, Resilient and Sustainable Urban Drainage Systems: An Analysis of Robustness under Deep Uncertainty," *Environmental Science & Technology*, Vol. 52, Issue 16 (2018), 9008–9021; Emily Talen, "Planning the Emergent and Dealing with Uncertainty: Regulations and Urban Form," in Tigran Haas, and Krister Olsson (eds.) *Emergent Urbanism: Urban Planning & Design in Times of Structural and Systematic Change* (Abingdon: Routledge, 2016), 141-146; Manuel C. Ribeiro et al, "Geostatistical uncertainty of assessing air quality using high-spatial-resolution lichen data: A health study in the urban area of Sines, Portugal," *Science of The Total Environment*, Vol. 562 (15 August 2016), 740-750; Gérard Hutter, "Collaborative governance and rare floods in urban regions – Dealing with uncertainty and surprise," *Environmental Science & Policy*, Vol. 55, Part 2, (January 2016), 302-308; Austin Zeiderman et al, "Uncertainty and Urban Life" (2015), 281-304; Eva H. Y. Beh et al, "Adaptive, multiobjective optimal sequencing approach for urban water supply augmentation under deep uncertainty," *Water Resources Research*, Vol. 51 (16 March 2015), 1529-1551; Austin Zeiderman, "Spaces of Uncertainty: Governing Urban Environmental Hazards," in Limor Samimian-Darash and Paul Rabinow (eds.), *Modes of Uncertainty: Anthropological Cases* (Chicago: The University of Chicago, 2015), 182-200.

In effect, this means that, first of all, it is essential for communities and public officials to acknowledge that uncertainty in order to advance with adaptive thinking.[158]

However, climate change represents a major problem to the reality of cities in our times. Cities located in coastal regions are especially vulnerable those are actually the majority of cities worldwide. Sea level rise is, in fact, a clear and paradigmatic example of the menaces for human settlements located close to oceanic shores or mouths of large rivers. In addition to coastal flooding risks, intensifying precipitation and storms affect cities and create instabilities and harms[159], as well as heat impacts (or heat-island effects)[160] and increased drought and water scarcity.[161] In effect, cities are becoming more and more vulnerable to disasters and their effects, because of their dimension, social density and heterogeneous social-ecological diversity.[162]

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[158] Craig Anthony (Tony) Arnold, "Resilient Cities and Adaptive Law," *Idaho Law Review*, Vol. 50 (2014), 245-264.

[159] E. Penning-Rowsell and M. Korndewal, "The realities of managing uncertainties surrounding pluvial urban flood risk: An ex post analysis in three European cities," *Journal of Flood Risk Management* (June 2018), 1-12.

[160] According to Stone, "Cities do not cause heat waves – they amplify them. Because of the greater prevalence of mineral-based building materials, such as stone, slate, concrete, and asphalt, cities absorb and retain substantially more heat than rural areas characterized by more vegetative cover. Known generally as the "urban heat island effect," this phenomenon keeps cities warmer by several degrees than surrounding countryside throughout the year. However, during unusually hot days, the divergence between urban and rural temperatures can be much greater, literally tipping the balance between an unpleasantly hot day in one environment and a public health emergency in another." See Brian Stone Jr., *The City and the Coming Climate: Climate Change in the Places We Live* (Cambridge: Cambridge University Press, 2012), 13.

[161] OECD, *Cities and Climate Change* (2010), 63-79.

[162] Andres Baeza et al, "Operationalizing the feedback between institutional decision-making, socio-political infrastructure, and environmental risk in urban vulnerability analysis," *Journal of Environmental Management*, Vol. 241 (1 July 2019), 407-417; Dalit Shach-Pinsly, "Measuring security in the built environment: Evaluating urban vulnerability in a human-scale urban form," *Landscape and Urban Planning*, Vol. 191 (2018), 03412; Carlos Tapia et al, "Profiling urban vulnerabilities to climate change: An indicator-based vulnerability assessment for European

It would not be wrong, therefore, to consider that most of uncertainty in today's cities is based on the worries which regard the reality of climate change and, consequently, the environmental balance as a whole. These problems lead to a myriad of issues concerning the ways how urban decisionmakers and legislators should address the needs of climate, environmental and, more precisely, resilience justice. In other words, it is in cities – where adaptation is most required – that those who are responsible for governing, managing and regulate need to find equitable approaches of resilience thinking, regarding social and ecological issues.[163]

According to Posner and Weisbach, a list of five essential lessons should be learned in order to decision- and lawmakers of the world (and also in cities) to change and adapt their perspectives on climate change and the solutions for it. These mentioned lessons are the following: (i) poorer nations are likely to suffer most from climate change events; (ii) the effects of today's GHG emissions will be felt far into the future; (iii) populations living in poorer countries in the future are most likely to benefit from the reduction of GHG emissions today and in the future; (iv) it is hard to verify how much different countries are responsible for emissions to date because any judgment would depends on complex

cities," *Ecological Indicators*, Vol. 78 (July 2017), 142-155; Trisha L. Moore et al, "Stormwater management and climate change: vulnerability and capacity for adaptation in urban and suburban contexts," *Climatic Change*, Vol. 138, Issue 3-4 (October 2016), 491-504; Sarah Dooling and Gregory Simon, "Cities, Nature and Development: The Politics and Production of Urban Vulnerabilities," in Sarah Dooling, and Gregory Simon (eds.), *Cities, Nature and Development: The Politics and Production of Urban Vulnerabilities* (Abingdon: Routledge, 2016), 3-22; Torsten Welle and Joern Birkmann, "Measuring the Unmeasurable: Comparative Assessment of Urban Vulnerability for Coastal Megacities — New York, London, Tokyo, Kolkata and Lagos," *Journal of Extreme Events*, Vol. 03, No. 03, 1650018 (2016), 1-14; I. M. Voskamp and F. H. M. Van de Ven, "Planning support system for climate adaptation: Composing effective sets of blue-green measures to reduce urban vulnerability to extreme weather events," *Building and Environment*, Vol. 83 (January 2015), 159-167.

[163] Brian Mayer, "A framework for improving resilience. Adaptation in urban contexts," in Beth Schaefer Caniglia, Manuel Vallé, and Beatrice Frank (eds.), *Resilience, Environmental Justice and the City* (Abingdon: Routledge, 2017), 37-56.

measurement issues; and (v) effective climate action must involve all nations which are responsible for significant GHG emissions.[164]

At this point, the need of protecting environmental rights and connecting it to the implementation of resilience justice is essential, not only but especially within the extremely populated and complex reality of urban environments. Therefore, in order to unleash the social-ecological potential of those elements, law, planning, and governance must, necessarily, adopt and adaptive approach.

An immense number of studies describe the uncertainties, instabilities, disruption and harms that cities and city dwellers face – both from climate change and from other forces and systems.[165] Most of the cases presented are also

[164] Eric A. Posner and David Weisbach, *Climate Change Justice* (Princeton, NJ: Princeton University Press, 2010), 11-13.

[165] D.E. Crews et al, "Climate change, uncertainty and allostatic load," *Journal Annals of Human Biology*, Vol. 46, Issue 1 (2019), 3-16; Allan Peñafiel Mera and Chandra Balijepalli, "Towards improving resilience of cities: an optimisation approach to minimising vulnerability to disruption due to natural disasters under budgetary constraints," *Transportation* (February 2019), 1-34; C.R. Thorne et al, "Overcoming uncertainty and barriers to adoption of Blue-Green Infrastructure for urban flood risk management" (2018), S960-S972; Michael Kane and Jake Whitehead, "How to ride transport disruption – a sustainable framework for future urban mobility," *Australian Planner*, Vol. 54, Issue 3 (2017), 177-185; M. Novák and Z. Votruba, "Discussion of uncertainties factors in Smart Cities systems," *2016 Smart Cities Symposium Prague* (30 June 2016), 16107780, 1-4; S. Giannini et al, "Uncertainty in estimating short-term health effects of air pollution in small- and medium-size cities," *Epidemiologia e Prevenzione*, Vol. 40, No. 3-4 (01 Mar 2016), 224-227; Michael R. Boswell and Christopher Read, "Global Changes, Local Impacts: California's Adaptation Tools Help its Cities Address Climate Change," *FOCUS 13, Faculty and Student Work* (2016), 72-75; Matthew Desmond and Kristin L. Perkins, "Housing and Household Instability," *Urban Affairs Review*, Vol. 52, Issue 3 (2016), 421-436; Mathilde Maurel and Michele Tuccio, "Climate Instability, Urbanisation and International Migration" (2016), 735-752; Melissa A. Kull et al, "The Roles of Instability and Housing in Low-Income Families' Residential Mobility," *Journal of Family and Economic Issues*, Vol. 37, Issue 3 (September 2016), 422-434; Austin Zeiderman et al, "Uncertainty and Urban Life" (2015), 281-304.

connected to the complexity of the different systems that are present within the territory of cities.[166]

Meanwhile, municipalities and regions need to adapt their governance and patterns of urban form to be better suited to current and future climates. However, the commitment for adaptation planning has not been implemented rapidly. In fact, different patterns of urban form naturally interact with climate change and, depending on their characteristics, are capable of reducing or intensifying even more the impact of overall global change.[167]

At the same time, the natural uncertainty related to the timing and magnitude of climate change is also a relevant barrier to implementing adaptation instruments. This means that focusing on implementation of adaptation and phasing of policy, planning, decision- and law-making reduces this barrier. It is, therefore, important to remove time as a decision marker and to argue for initial comprehensive plans to prevent maladaptive choices. After testing micro-climate outcomes of previous interventions, new adaptive choices must be designed and implemented incrementally, in order to respond increased climate impacts. [168]

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[166] Marina Alberti et al, "Embracing Urban Complexity," in Thomas Elmqvist, Xuemei Bai, Niki Frantzeskaki, Corrie Griffith, David Maddox, Timon McPhearson, Susan Parnell, Patricia Romero-Lankao, David Simon, and Mark Watkins (eds.), *Urban Planet: Knowledge towards Sustainable Cities* (Cambridge: Cambridge University Press, 2018), 45-67; Michael Patrick McGreevy, "Complexity as the telos of postmodern planning and design: Designing better cities from the bottom-up," *Planning Theory*, Vol. 17, Issue 3, (2018), 355-374; Jacqueline M. Klopp and Danielle L. Petretta, "The urban sustainable development goal: Indicators, complexity and the politics of measuring cities," *Cities*, Vol. 63 (March 2017), 92-97; Sybil Derrible, "Complexity in future cities: the rise of networked infrastructure," *International Journal of Urban Sciences*, Vol. 21, Issue sup1: Special Issue: Future Cities (2017), 68-86; Juval Portugali, "What Makes Cities Complex?," in Juval Portugali, and Egbert Stolk (eds.), *Complexity, Cognition, Urban Planning and Design* (Cham, Springer, 2016), 3-19.

[167] Yaser Abunnasr et al, "Windows of opportunity: addressing climate uncertainty through adaptation plan implementation," *Journal of Environmental Planning and Management*, Vol. 58, Issue 1 (2015), 135-155.

[168] Abunnasr et al, "Windows of opportunity," (2015), 135-155.

This is, actually, to recognise that uncertainty exists as a continuous issue, both in urban and rural spaces. Nevertheless, the increasing population of cities and the complexity of systems that they shelter requires a continuous and comprehensive adaptive attention.

Even in what concerns economy, uncertainty is a reality in urban environments and adaptation is also needed. According to Thieme's perspective, the current state of the world poses new possibilities and challenges for rethinking and researching urban precarious environments through the analytical frame of the hustle economy, drawing from local and ethnographic works in different places.[169] This means that even from in economic approaches, these possibilities and challenges are also condition of contemporary urbanism amongst (though not limited to) youth, a set of working practices in the face of uncertainty, and a place-based performative politics of style that potentially speaks to multiple elsewhere around the globe.

These are only some examples that demonstrate that uncertainty, instability, and precarious urban environments are, therefore, increasingly a large part of today's "ordinary" urban experience.[170] Therefore, when facing cities, as realities of hybrid complex systems where natural and human/cultural evolution continuously occurs, adaptation is absolutely needed.[171]

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[169] Tatiana Adeline Thieme, "The hustle economy: Informality, uncertainty and the geographies of getting by," *Progress in Human Geography*, Vol. 42, Issue 4 (August 2018), 529-548.

[170] See, for all, Jennifer Robinson, *Ordinary Cities: Between Modernity and Development* (London: Routledge, 2006), 93-115.

[171] Eoin Flaherty, *Complexity and Resilience in the Social and Ecological Sciences* (London: Palgrave, 2019), 213-230; Michael Batty, "Evolving a Plan: Design and Planning with Complexity," in Juval Portugali, and Egbert Stolk (eds.), *Complexity, Cognition, Urban Planning and Design* (Cham: Springer, 2016), 21-42; and Juval Portugali, "Complexity Theories of Cities: Implications to Urban Planning," in Juval Portugali, Han Meyer, Egbert Stolk, and Ekim Tan (eds.), *Complexity Theories of Cities Have Come of Age: An Overview with Implications to Urban Planning and Design* (Heidelberg: Springer, 2012), 221-244.

1.3. Protecting rights in the city

One of the most discussed forms of addressing social-ecological problems through a legal perspective, since the last decades of the 20th century, has been the doctrine of environmental rights.[172] Especially in European legal systems (but not only), and more recently among UN policy and agendas, it is possible to find examples that an environmental rights movement has gained a strong shape.

And, in fact, this movement was certainly strengthened by the inscription of right to live in a healthy environment in some constitutions, namely in the new European democracies of the 1970s (Portugal in 1976 and Spain in 1978).[173] Moreover, according to Boyd, in 2012, ninety-two constitutions included substantive environmental rights and sixty-three used the language of a healthy environment.[174]

These constitutional environmental rights naturally apply to the whole territory, including both urban and rural areas. However, as seen before, in the case of cities, uncertainties in and disturbances to urban environments and urban life can strongly undermine the abilities of urban inhabitants to meet their basic needs and can, therefore, contribute to unjust conditions. This is especially true for the impacts of climate change, but is valid for other environmental, economic, political, and social disturbances as well. As a result, legal and governance frameworks must confront how they protect the rights of urban inhabitants

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[172] See, for all, Christopher Miller, *Environmental Rights: Critical Perspectives* (London: Routledge, 1998); Tim Hayward, *Constitutional Environmental Rights* (Oxford: Oxford University Press, 2005); Hiskes, *The Human Right to a Green Future* (2009); Boyd, *The Environmental Rights Revolution* (2012).

[173] Though it could be said that Italy was the first contemporary national constitution to include environmental provisions, in 1948, it was still a rudimentary norm once it merely intended to safeguard natural beauty and the historical and artistic heritage of the nation (see Article 9 of the Italian Constitution).

[174] Boyd, *The Environmental Rights Revolution* (2012), 59-62.

under such complex, uncertain, unstable, and difficult conditions, particularly as urban systems undergo major changes, such as in the recent decades.

This means that included in the broad idea of environmental rights could be not only natural environment, but also what is considered as "built environment", *i.e.* decent housing, access to energy, transport or urban infrastructure.[175] And not long time before the approval of those environmental-rights-pioneer-constitutions, the French philosopher and sociologist Lefebvre had already introduced, in 1968, "the right to the city"[176], as:

> "[…] a superior form of rights: right to freedom, to individualization in socialization, to habit and to inhabit. The right to the *oeuvre*, to participation and appropriation (clearly distinct from the right to property), are implied in the right to the city."[177]

From a more rigorous legal perspective (as differentiated from a more sociological or anthropological perspective),[178] this so-called "right" represents the needs of the inhabitants of cities in those times. Citizens urged for the guarantee of the equality principle and also for the protection of a larger aggregation of other rights within urban environments. This was later developed by Harvey and will be deeper analysed in further chapters. However, some

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[175] Some of them may actually not consist of concrete justiciable rights but could be defended as desirable social goals or even as necessary preconditions of democracy. On this issue, see Hayward, *Constitutional Environmental Rights* (2005), 80, 146.

[176] Henri Lefebvre, *Le Droit à la Ville* (Paris: Anthropos, 1968). The term had already been brought by the author in an article the year before. See Henri Lefebvre, "Le droit à la ville," *L'Homme et la société* 6, (1967), 29-35.

[177] Henri Lefebvre, *Writings on Cities*, trans. and ed. E. Kofman and E. Lebas (Cambridge, MA: Blackwell, 1996), 173-174.

[178] Although the presented perspectives are substantially different, very often strong bounds connect anthropology and law, more specifically within the realm of legal anthropology. On these issues see, in Portuguese, Armando Marques Guedes, *Entre Factos e Razões – Contextos e Enquadramentos da Antropologia Jurídica* (Coimbra: Almedina, 2006).

examples of those rights, which are actually mentioned by Harvey, are rights to housing and shelter.[179]

From Grigolo's perspective, within the right to the city, in a sense, the goal of "justice" comes before "government", it includes the idea of

> "putting government action and its human rights, in the perspective of delivering *a certain* justice: preserving the collective nature and quality of the city space, and putting local residents and their needs and uses vis-à-vis the space of the city, at the centre of the city and human rights."[180]

In effect, this right to the city is represented by the authors as an equitable enjoyment of the city's territory and services by all its inhabitants while respecting the needs of sustainability and social justice so that the primary object of achieving an adequate standard of living for all is attained.

The ground for advancing the "right to the city", against existing governance regimes and social structures, would, therefore, be the existence of inequalities in urban environments, with special focus on those areas which have been suffering substantial growth or sprawl. And the issues for advancing this "right" would concern not only housing and shelter, but also access to health, clean water, energy or transportation, and even employment (from a more social perspective).

The actual functions of this "right to the city", formulated in the 60s, would be more based on the idea that inequalities and injustices exist within the urban territories, they eventually increase with urban sprawl, and they must be addressed by governments. One example of how public decision- and lawmakers tried to include this "right" in legal provisions was the Brazilian experience of

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[179] David Harvey, "The Right to the City," *New Left Review*, Vol. 53 (2008), 35.

[180] Michele Grigolo, "Towards a Sociology of the Human Rights City: Focusing of practice," in Barbara Oomen, Martha F. Davis, and Michele Grigolo (eds.), *Global urban Justice: The Rise of Human Rights Cities* (Cambridge: Cambridge University Press, 2016), 287.

the *Estatuto da Cidade*, the City Statute, which was approved in 2001.[181] This statute required that 1.600 cities (approximately 30%) of Brazilian municipalities either approve master plans or reformulate existing local planning and rules according to the guiding principles of the statute and on the basis of public participation.[182]

Today, to the problems that Lefebvre's "right to the city" intended to address should also be added the phenomena that urban environments are complex, uncertain, unstable, and face new challenges every day, especially in what concerns environmental and climate issues. And governments and lawmakers are relevant actors in this process.

Actually, in the 1980s, Burnham wrote that the state exists in order to fulfil the following three essential functions:

> "First, it defends the basic needs and interests of those who control the means of production within the society in question. Closely associated with this is the second function of the state: achieving legitimacy for itself and ensuring social harmony. This function involves the remarkable fact, brooded upon by political theorists since time immemorial, that somehow the state – which is organised force – becomes an agent of moral authority, and its rule is accepted in the main by those subject to it. Finally, no state can survive if it cannot adequately defend itself, and the dominant powers in the economy and society, from external attack."[183]

These ideas were not specifically on environmental issues. However, decisions, norms and principles play a paramount role in all this panorama. It is possible to

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[181] The Brazilian City Statute was approved by the Law no. 10.257, of 10 July 2001 <http://www.planalto.gov.br/ccivil_03/LEIS/LEIS_2001/L10257.htm> (accessed on 2019.12.29).

[182] See Teresa Caldeira, and James Holston, "Participatory urban planning in Brazil," *Urban Studies*, Vol. 52, Issue 11 (August 2015), 2001-2017.

[183] W.Burnham, "The constitution, capitalism and the need for rationalised regulation," in R.Goldwyn and W.Schambra (eds.), *How Capitalistic is the Constitution?* (Washington D.C.: American Enterprise Institute, 1982), 75; also see Patrick Dunleavy and Brendan O'Leary, *Theories of the State. The Politics of Liberal Democracy* (London: Macmillan, 1987), 322.

verify the existence worldwide of different norms and principles regarding the protection of environmental rights, foreseen at the various levels of sectors of the law. From international to regional, national or local law, decision- and law-making are gradually recognising environmental rights. And cities, considered as places where a large and increasing part of the world's population inhabit, are also adapting their legal and regulatory frameworks to new realities.[184]

The arguments hereby presented are also the reasons which have been served as ground for the work of the UN Habitat Programme, which was established in 1978 as an outcome of the First UN Conference on Human Settlements and

[184] Juliane Welz et al, "Adapting Built–Up Areas to Climate Change: Assessment of Effects and Feasibility of Adaptation Measures on Heat Hazard," in Sigrun Kabisch, Florian Koch, Erik Gawel, Annegret Haase, Sonja Knapp, Kerstin Krellenberg, Jaime Nivala, and Andreas Zehnsdorf (eds.), *Urban Transformations* (Cham: Springer, 2018), 327-338; Malcolm Araos et al, "Climate change adaptation planning in large cities: A systematic global assessment," *Environmental Science & Policy*, Vol. 66 (December 2016), 375-382; Jörg Cortekar et al, "Why climate change adaptation in cities needs customised and flexible climate services," *Climate Services*, Vol. 4 (December 2016), 42-51; Eric Chu et al, "Climate adaptation as strategic urbanism: assessing opportunities and uncertainties for equity and inclusive development in cities," *Cities*, Vol. 60, Part A (February 2017), 378-387; Ewa Kubejko-Polańska, "The role of local self-government in stimulating urban development in the context of the construction of age-friendly cities and the concept of Silver Economy," Nierówności Społeczne a Wzrost Gospodarczy, No. 49 (2017), 216-227; Leslie Brandt et al, "A framework for adapting urban forests to climate change," *Environmental Science & Policy*, Vol. 66 (December 2016), 393-402; Jörg Knieling, and Katharina Klindworth, "Climate adaptation governance in cities and regions between hierarchical steering and network cooperation: findings from theoretical considerations and international practice," in Jörg Knieling (ed.), *Climate Adaptation Governance in Cities and Regions: Theoretical Fundamentals and Practical Evidence* (Chichester: Wiley, 2016), 405-420; Paulo Silva, "Tactical urbanism: Towards an evolutionary cities' approach?," *Environment and Planning B: Urban Analytics and City Science*, Vol. 43, Issue 6 (2016), 1040-1051; Shakil Bin Kashem et al, "Planning for Climate Adaptation: Evaluating the Changing Patterns of Social Vulnerability and Adaptation Challenges in Three Coastal Cities," *Journal of Planning Education and Research*, Vol. 36, Issue 3 (2016), 304-318; and Simon Joss, "Eco-cities and Sustainable Urbanism," in James D. Wright (ed.), *International Encyclopedia of the Social & Behavioral Sciences*, 2nd edition, Vol 6. (Oxford: Elsevier, 2015), 829-837.

Sustainable Urban Development (Habitat I) held in Vancouver, Canada, in 1976, and expressly dedicated to improving lives in human settlements.[185]

The already mentioned *New Urban Agenda* intends to address these issues. And, in effect, a special reference should be addressed to a chapter specifically dedicated to "Environmentally sustainable and resilient urban development." After the approval of this international reference document, the protection of environmental rights and the implementation of resilience is a mission of the states and the cities, both at national and local levels.[186]

1.4. Data-driven, inclusive, and sustainable urban governance and law

The already mentioned uncertainties and instabilities in urban environments have been influencing the options of public officials in order to prompt urban policies and governance structures that can be data-driven, inclusive and sustainable.[187]

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[185] See more information on UN-Habitat webpage <https://unhabitat.org/> (accessed on 2019.12.29).

[186] See the *New Urban Agenda*, at paragraphs 63 to 80.

[187] See Simon Elias Bibri, "The anatomy of the data-driven smart sustainable city: instrumentation, datafication, computerization and related applications," *Journal of Big Data*, Vol. 6, Article no. 59 (2019), 1-43; Ignacio Marcovecchio et al, "Digital Government as Implementation Means for Sustainable Development Goals," *International Journal of Public Administration in the Digital Age*, Vol. 6, Issue 3 (2019), 1-22; Margarita Angelidou et al, "Enhancing sustainable urban development through smart city applications," *Journal of Science and Technology Policy Management*, Vol. 9, No. 2 (2018), 146-169; Anna Visvizi et al, "Policy making for smart cities: innovation and social inclusive economic growth for sustainability," *Journal of Science and Technology Policy Management*, Vol. 9 No. 2 (2018), 126-133; Håvard Haarstad, "Constructing the sustainable city: examining the role of sustainability in the 'smart city' discourse," *Journal of Environmental Policy & Planning*, Vol. 19, Issue 4 (2017), 423-437; Constantine E. Kontokosta and Christopher Tull, "A data-driven predictive model of city-scale energy use in buildings," *Applied Energy*, Vol. 197 (1 July 2017), 303-317; Alberto Abella et al, "A model for the analysis of data-driven innovation and value generation in smart cities' ecosystems," *Cities*, Vol. 64 (April 2017), 47-53; Joaquim Massana et al, "Identifying services for short-term load forecasting using data driven models in a Smart City

The services provided by public governmental authorities – from national to local levels – could also be understood as corresponding, at a large amount, to a specific concretization of the protection of some rights to the citizens.[188] On the other hand, problem-solving can also be understood as a relevant motivation for the provision of city services.[189] Although the motivations can be different, a solid connection to the basics of Lefebvre's "right to the city" exists, because a large array of city services, such as water, clean air, housing, or transportation, can be strongly related to the environmental rights inherent to mentioned "the right to the city."

Therefore, in order to improve better management and governance in the city, information is becoming more and more valuable. The use of information and communication technologies (ICT) solutions to improve efficiency in the organization of certain territories, the implementation of measures to enhance an efficient and sustainable use of natural resources or the protection of natural species and ecosystems. Simultaneously, the use of new technologies can ease the enactment of decisions, policies, or legislation in order to grant to the citizens health, employment, or social support. The provision of these services with effectiveness and to all citizens reflect the paramount mission of public

platform," *Sustainable Cities and Society*, Vol. 28 (January 2017), 108-117; Rob Kitchin, "Data-driven urbanism," in Rob Kitchin, Tracey P. Lauriault, Gavin McArdle, *Data and the City* (London: Routledge, 2017), 44-55; Matthew Tenney and Renee Sieber, "Data-Driven Participation: Algorithms, Cities, Citizens, and Corporate Control," *Urban Planning*, Vol. 1, Issue 2 (2016), 101-113; Michael Fitzgerald, "Data-Driven City Management: A Close Look at Amsterdam's Smart City Initiative," *MIT Sloan Management Review*, Vol. 57, Ed. 4 (May 2016).

[188] Tenille E. Brown, "Human Rights in the Smart City: Regulating Emerging Technologies in City Places," in Leonie Reins (ed.), *Regulating New Technologies in Uncertain Times*, ITLS, Vol. 32 (The Hague: T.M.C. Asser Press, 2019), 47-65.

[189] Susan Athey, "Beyond prediction: Using big data for policy problems," *Science*, Vol. 355, Issue 6324 (03 Feb 2017), 483-485; Wout Broere, "Urban underground space: Solving the problems of today's cities," *Tunnelling and Underground Space Technology*, Vol. 55 (May 2016), 245-248; and Christian Iaione, "The CO-City: Sharing, Collaborating, Cooperating, and Commoning in the City," *American Journal of Economics and Sociology*, Vol. 75, Issue2 (March 2016), 415-455.

authorities of protecting the rights of citizens who live in the places managed by those entities.[190]

It is the balance of ecosystems and the capacity of communities to withstand uncertain disturbances that are in jeopardy and, with them, also the environmental rights. This means that, when concretising the protection of rights through the previously mentioned means, public administration services are intended to perform a *secundum legem* protection. This protection consists of observing and densifying the compliance of constitutional imperatives.[191]

It happens at least in the cases where those rights are expressly provided by the constitution. If not, it is also acceptable for public administration to do it, under the possibility of a *praeter legem* protection – i.e. providing certain public service or acting in a given way when it is not expressly predicted in law, but to achieve positive or valid legal principles or pursue the public interest, if not against the law.[192]

Most of what has been discussed here is connected to the reality of environmental rights. However, the evolution of data-driven, inclusive and sustainable urban governance has demonstrated to be specifically focused on efficiency, economic development and growth, ecosystem services, and political or public or interest-group demand. According to the ideas above mentioned, these developments

[190] Tiago de Melo Cartaxo and Kamrul Hossain, "Digitalization and Smartening Public Governance of the European High North Regions," *Smart Cities and Regional Development (SCRD) Journal*, Vol. 2, No. 2 (2018), 65-80.

[191] Jorge Pereira da Silva, *Deveres do estado de proteção de direitos fundamentais: fundamentação e estrutura das relações jusfundamentais triangulares* (Lisboa: Universidade Católica Editora, 2015), 656-658.

[192] Pereira da Silva, *Deveres do estado de proteção de direitos fundamentais* (2015), 658-664.

can also represent an opportunity to serve an agenda for environmental rights, or even for resilience justice.[193]

At this point, the theories that defend the end of sustainability and the introduction of social-ecological resilience as a new narrative of connecting different systems should be discussed. And data-driven solutions appear to be an opportunity for a more effective implementation or achieving of resilience justice in the city.[194] More specifically, these solutions help governments, corporations, associations and citizens to sensor and monitor the evolving reality of the territories that they manage or live in. And with the support of ICTs will certainly be easier to know more about territories and communities and help them to adapt to inevitable changes.[195]

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[193] Paolo Cardullo and Rob Kitchin, "Smart urbanism and smart citizenship: The neoliberal logic of 'citizen-focused' smart cities in Europe," *Environment and Planning C: Politics and Space*, Vol. 37, Issue 5 (2018), 813-830; Maria Kaika, "'Don't call me resilient again!': the New Urban Agenda as immunology … or … what happens when communities refuse to be vaccinated with 'smart cities' and indicators,"
Environment and Urbanization, Vol. 29, Issue 1 (2017), 89-102; Igor Calzada and Cristobal Cobo, "Unplugging: Deconstructing the Smart City," *Journal of Urban Technology*, Vol. 22, Issue 1 (2015), 23-43; Tannaz Monfaredzadeh and Robert Krueger, "Investigating Social Factors of Sustainability in a Smart City," *Procedia Engineering*, Vol. 118 (2015), 1112-1118; and Álvaro Oliveira and Margarida Campolargo, "From Smart Cities to Human Smart Cities," *48th Hawaii International Conference on System Sciences* (2015), 2336–2344.

[194] See Benson and Craig, *The End of Sustainability* (2017), 135-159.

[195] Armando Papa et al, "E-health and wellbeing monitoring using smart healthcare devices: An empirical investigation," *Technological Forecasting and Social Change* (2018), 119226; Joana Branco Gomes et al, "Measuring Happiness and Wellbeing in Smart Cities - Lisbon Case Study," *Proceedings of the 7th International Conference on Smart Cities and Green ICT Systems* (2018), 270-277; and Agnis Stibe and Kent Larson, "Persuasive Cities for Sustainable Wellbeing: Quantified Communities," in Muhammad Younas, Irfan Awan, Natalia Kryvinska, Christine Strauss, and Do van Thanh (eds.), *Mobile Web and Intelligent Information Systems*, Lecture Notes in Computer Science, Vol. 9847 (Cham: Springer, 2016), 271-282; Alexander Prado Lara et al, "Smartness that matters: towards a comprehensive and human-centred characterisation of smart cities," *Journal of Open Innovation: Technology, Market, and Complexity*, Vol. 2, Issue 2, 8 (2016), 1-13.

Today's expanding global idea of *smart cities* is based on urban strategies that intend to use technology and promise to improve the quality of life for all citizens. Nonetheless, following the words of Han and Hawken,

> "[i]f the term *smart city* is to have any enduring value, technology must be used to develop a city's unique cultural identity and quality of life for the future, which must naturally include sustainability and, most of all, social-ecological resilience."[196]

The concept of *smart city* has been evolving from a mostly economic sector-based approach to a more comprehensive view that intends to place governance and stakeholders' involvement at the core of urban strategies.[197] But, in fact, still few practices are known where urban authorities measure the real impact of smart initiatives on the daily life of their citizens. However, some independent institutions and research centres usually publish smart city rankings, based on smart projects implementation or technological infrastructures in cities. And no instruments are applied to verify if and how smart programmes are affecting nature and people living in city. Examples of these initiatives are cities that adopt performance dashboard to measure and evaluate the capacity of smart strategies to impact on the quality of life.[198] Local authorities are still trying to implement roadmaps and strategies for the adoption of standards to support smart city investments, evaluate their performance and even unleashing collective urban

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[196] Hoon Han and Scott Hawken, "Introduction: Innovation and identity in next-generation smart cities," *City, Culture and Society*, Vol. 12 (March 2018), 1-4.

[197] Victoria Fernandez-Anez et al, "Smart City implementation and discourses: An integrated conceptual model. The case of Vienna," *Cities*, Vol. 78 (August 2018), 4-16.

[198] Sarah Barns, "Smart cities and urban data platforms: Designing interfaces for smart governance," *City, Culture and Society*, Vol. 12 (March 2018), 5-12; Guiomar Andrade Fernandes, "A Framework for Dashboarding City Performance: An application to Cascais smart city" (July 2017) <https://run.unl.pt/bitstream/10362/25017/1/TGI0104.pdf> (accessed on 2019.12.29); Rob Kitchin et al, "Knowing and governing cities through urban indicators, city benchmarking and real-time dashboards," *Regional Studies, Regional Science*, Vol. 2, Issue 1 (2015), 6-28.

intelligence.[199] And here, law is still far from being accompanying these recent realities.[200]

The concept of data-driven regulation and governance in the context of the so-called smart cities is, therefore, of major relevance in today's increasingly urbanising and technologic world. Today's law and policy must live with the employment of realities such as data science, big data, open data, artificial intelligence (AI), internet of things (IoT) – or even the internet of everything (IoE) –, and predictive analytics to improve the efficiency and sustainability of their services, and decision- and law-making. In analysis are challenges such as the disconnection between traditional administrative law frameworks and data-driven regulation and governance, the effects of the privatisation of some public services, or even the transparency and accountability that can characterise (or not) different forms of data-driven administrative processes.[201]

And data-driven solutions may, at the same time, enhance urban sustainability and not improve social-ecological resilience. This is the reason why Colding and Barthel argue that "[s]mart city literature must (…) better include analysis around social sustainability issues for city dwellers." From the authors' perspective, issues of resilience and cyber security should be better addressed, including how smart city solutions may affect the autonomy of urban governance, personal integrity and how it may affect the resilience of infrastructures that provide inhabitants with basic needs, such as food, energy

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[199] Renata Paola Dameri, "Urban Smart Dashboard: Measuring Smart City Performance," in Renata Paola Dameri (ed.), *Smart City Implementation: Creating Economic and Public Value in Innovative Urban Systems* (Cham: Springer, 2017), 67-84.

[200] Miguel de Castro Neto and Tiago de Melo Cartaxo, "Smart and collective urban intelligence," in Teresa Rodrigues and André Inácio (eds.), *Security at a Crossroad: New Tools for New Challenges* (New York: Nova Science, 2019), 83-94.

[201] Sofia Ranchordás and Abram Klop, "Data-Driven Regulation and Governance in Smart Cities," in Vanessa Mak, Eric Tjong Tjin Tai, and Anna Berlee (eds.), *Research Handbook on Data Science and Law* (Edward Elgar, 2018), 245-273.

and water security. Another "major gap" in literature is, according to Colding and Barthel, how smart city developments may change human-nature relations, with focus on people's learning towards a stronger connection with nature and a more pro-environmental behaviour.[202]

Data-driven assessment tools can, therefore, be used as support for decision- and law-making in urban development, as they provide new assessment, monitoring, and measurement methodologies for urban environments to show the progress towards possible defined targets, both at social and environmental levels. And legal frameworks should, naturally, learn and evolve with them.[203]

It is, consequently, possible to argue that a new era is unfolding, where "data-informed urbanism" is increasingly being complemented and replaced by "data-driven, networked urbanism", which can provide a set of new solutions for urban problems, and law and governance must take profit of it to improve their own systems.[204]

In order to be more inclusive and sustainable, decision- and law-making can also make use of data-driven (or "smartness") to promote citizen engagement and public participation. The capabilities of these new solutions of participation based on ICTs may include interesting benefits, such as the following ones: (i) remove barriers to key aspects of deliberation and education that are often seen as imperative to more active forms of civic participation; (ii) bring the power of data-driven analysis to extract hidden insights from unruly datasets; (iii) condense the complexity of urban life to consumable and easy-to-read graphics

[202] Johan Colding and Stephan Barthel, "An urban ecology critique on the "Smart City" model," *Journal of Cleaner Production*, Vol. 164 (15 October 2017), 95-101.

[203] Hannele Ahvenniemi et al, "What are the differences between sustainable and smart cities?," *Cities*, Vol. 60, Part A (February 2017), 234-245; and Esteve Almirall et al, "Smart Cities at the Crossroads: New Tensions in City Transformation," *California Management Review*, Vol. 59, Issue 1 (November 2016), 141-152.

[204] Kitchin, "Data-driven urbanism" (2017), 44-55.

on a screen; and (iv) provide greater transparency in the democratic process through clearer documentation.[205]

Also on these issues, Aragão describes the legal duty in environmental decision making to include the relationship between facts and science on the one hand, and feelings and emotions on the other hand, as well as the importance of ICT and GIS for the inclusion of those features in the management of ecosystem services.[206] And based on these principles, the same ideas could naturally be applied to cities, especially due to the complexity of urban spaces and the increasing existence of sensors, IoT and *smartification*.

This new reality of data-driven urban environments is, in fact, an adaptation itself to continuous evolution of technology and can be an important game-changer for more inclusive, sustainable, and even resilient cities, today and in the future. Integration of all the already mentioned characteristics is, therefore, close to the concretisation of Lefebvre's idea. In fact, if he introduced the "right to the city", some technical literature presents today the "right to the smart city"[207] or "informational right to the city"[208], as possible evolutions of that first *lefebvrian* suggested approach. And if one adds the sustainable element, it is also possible

[205] Tenney and Sieber, "Data-Driven Participation: Algorithms, Cities, Citizens, and Corporate Control" (2016), 101-113.

[206] See Alexandra Aragão, "When feelings become scientific facts: valuing cultural ecosystem services and taking them into account in public decision-making," in Lorenzo Squintani, Jan Darpö, Luc Lavrysen, and Peter-Tobias Stoll (eds.), *Managing Facts and Feelings in Environmental Governance* (Cheltenham: Edward Elgar, 2019), 53-80. On detecting territorial injustices, see also Alexandra Aragão, "O mapeamento dos serviços culturais dos ecossistemas e a deteção de injustiças territoriais", in Alexandra Aragão (coord.), *As infraestruturas de dados espaciais e outras ferramentas de apoio a uma decisão justa* (Coimbra: Instituto Jurídico, 2018), 105-118.

[207] See Paolo Cardullo et al (eds.), *The Right to the Smart City* (Bingley: Emerald, 2019).

[208] Joe Shaw and Mark Graham, "An Informational Right to the City? Code, Content, Control, and the Urbanization of Information," *Antipode*, Vol. 49 (2017), 907-927.

to argue for argue for a "right to the sustainable and smart city."[209] Actually, these suggestions are strongly connected with the broadly debated right to enjoy the benefits of scientific progress.[210]

The idea of putting together concepts such as data-driven (or *smart*), sustainability, and inclusiveness has received a broad number of followers in EU, particularly in the beginning of the 2010s decade. This "movement" was due to the approval of a relevant agenda of policies, labelled as *Europe 2020 Strategy*, which was a reference framework for activities at EU and at national and regional levels, mainly for European financial support to the Member States.[211] The comprehensive progress reports of this strategy demonstrated that the future must be more focused in resilience, especially after the enactment of the Sustainable Development Goals (SDGs) by the United Nations (UN), which set specific aims for resilient cities and communities.[212]

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[209] Rob Kitchin, Paolo Cardullo, Cesare Di Feliciantonio, "Citizenship, Justice, and the Right to the Smart City," in Paolo Cardullo, Cesare Di Feliciantonio, and Rob Kitchin (eds.), *The Right to the Smart City* (Bingley: Emerald Publishing, 2019), 1-24; Sara Heitlinger, Nick Bryan-Kinns, and Rob Comber, "The Right to the Sustainable Smart City," *CHI '19: Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, Paper No.: 287 (May 2019), 1-13.

[210] See the UN Report of the Special Rapporteur in the field of cultural rights, Farida Shaheed, The right to enjoy the benefits of scientific progress and its applications <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G12/134/91/PDF/G1213491.pdf?OpenElement> (accessed on 2020.02.10). On the application of this right under the International Covenant on Economic, Social and Cultural Rights, see, in Portuguese, Teresa Pizarro Beleza and Helena Pereira de Melo, "O Direito a Beneficiar do Progresso Científico e das suas Aplicações no PIDESC," in *Estudos em Homenagem ao Prof. Doutor Sérvulo Correia* (Coimbra: Coimbra Editora, 2010).

[211] Communication from the Commission "Europe 2020 – A strategy for smart, sustainable and inclusive growth" [Brussels, 3.3.2010 COM (2010) 2020] <https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf> (accessed on 2019.12.29).

[212] See, as an example, EUROSTAT, *Smarter, greener, more inclusive? – Indicators to Support the Europe 2020 Strategy* (Luxembourg: Publications Office of the European Union, 2016) <https://ec.europa.eu/eurostat/documents/3217494/7566774/KS-EZ-16-001-EN-N.pdf/ac04885c-cfff-4f9c-9f30-c9337ba929aa> (accessed on 2019.12.29).

The need of urban environments to be more resilient is due to their particular characteristics of complexity, uncertainty, instability, and inequality. These features can make them more vulnerable to change, namely when it concerns climate change, and the major victims of urban vulnerabilities are, necessarily, social and ecological systems.[213]

2. Urban environments as uncertain, unstable, and disruptive

2.1. Climate change and cities

The world has always been on the move – both externally and internally. And with the world, also people who live in it, nature and technologies change at a vertiginous pace. Therefore, changes in temperature, different atmospheric phenomena, alterations to the sea level or major human migrations are paradigmatic examples of the continuous mutations that the planet Earth has been subject to.

Our age is being characterized by scientists as the Anthropocene.[214] This means that Earth has moved into an era in which human impact is becoming more significant for geology and ecosystems. In fact, it has been more recently

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[213] Marco Armiero and Massimo De Angelis, "Anthropocene: Victims, Narrators, and Revolutionaries," *South Atlantic Quarterly*, Vol. 116, Issue 2 (2017), 345-362; Laura Thomas-Walters and Nichola J. Raihani, "Supporting Conservation: The Roles of Flagship Species and Identifiable Victims," *Conservation Letters*, Vol. 10, Issue 5 (September/October 2017), 581-587; Helen Kopnina, "The victims of unsustainability: a challenge to sustainable development goals," *International Journal of Sustainable Development & World Ecology*, Vol. 23, Issue 2 (2016), 113-121; Catriona McKinnon, "Climate justice in a carbon budget," *Climatic Change*, Vol. 133, Issue 3 (December 2015), 375-384; Stephen Humphreys, "Competing claims: human rights and climate harms," in Steve Vanderheiden (ed.), *Environmental Rights* (London: Routledge, 2012), 159-190.

[214] Jedediah Purdy, *After Nature: A Politics for the Anthropocene* (Cambridge, MA: Harvard University Press, 2015), 1-6; David F. Hendry, "Climate Change: Lessons for our Future from the Distant Past," *Economics Series Working Papers* 485, University of Oxford, Department of Economics (2010) <https://www.economics.ox.ac.uk/materials/papers/4358/paper485.pdf> (accessed on 2019.12.29).

characterised by the increase of greenhouse gases, depletion of the ozone layer, sea level rise and the loss of various species, both in fauna or flora. Although change always existed, these are only some of the multiple reasons why action is needed from public officials, decisionmakers, legislators and even judges in order to face uncertainty and, at least, try to adapt governance and law to the risks of uncertainty. In respect to social-ecological realities, uncertainty is our biggest certainty.[215]

And phenomena that happen in one place in the world have, naturally, direct or indirect effects on other places of the globe. That is why Aragão considers that the end of the Holocene geological period (which begun about 11,700 years ago) and the beginning of the Anthropocene is in itself the reason for the development of a "planetary law", capable of being "multiversal" and of developing new paradigms of caution that seek a certain balance between human actions. Those actions are the ones dominated by markets, and a planet full of life and abiotic elements, all equally at risk before the excesses of human beings.[216]

Therefore, and although it was once considered as a problem of a distant future, a large number of authors characterize climate change as one of the most serious problems facing the world today or even the defining environmental issue of the 21st century.[217]

According to Benson and Craig,

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[215] William D. Nordhaus, "Projections and Uncertainties About Climate Change in an Era of Minimal Climate Policies," *American Economic Journal: Economic Policy*, vol 10(3) (December 2016, rev. September 2017), pages 333-360 <https://www.nber.org/papers/w22933> (accessed on 2019.12.29).

[216] Alexandra Aragão, "Direito do ambiente, direito planetário," *Themis*, Ano XV, no. 26/27 (2014), 153-181.

[217] Posner and Weisbach, *Climate Change Justice* (2010), 1; David Hunter et al, *International Environmental Law and Policy*, Fifth edition (St. Paul, MN: Foundation Press, 2015), 608.

> "There is a reason (…) that an increasing number of scientists, academics, and journalists refer climate change as either 'climate weirding' or 'global weirding.' Things are not just 'changing' – they are getting strange. And unpredictable. Adopting a trickster cultural narrative would help (…) to shift our perception of our own relationship to this strangeness, increasing our own resilience and chances for productively coping with the Anthropocene."[218]

A large number of populations around the world are affected by changes in oceans and land, observing the impacts of climate change. People affected by climate change can be coastal residents, farmers, fishermen, or leaders in the armed services. Some of the mentioned impacts of climate change are the following: i) ocean waters are becoming more acidic; ii) ocean temperatures are rising; iii) ice is melting; iv) sea level is rising; v) local and regional weather is changing; and vi) human safety, health, and well-being are threatened.[219]

From rural areas to urban territories, realities are changing at a notably fast pace. Therefore, International Law tries to accompany these changes through its sources of law.[220] It officially recognised this global change with the United Nations Framework Convention on Climate Change (UNFCCC), which was adopted on 9 May 1992 and opened for signature at the Earth Summit in Rio de Janeiro (from 3 to 14 June 1992).

The UNFCCC, which was immediately ratified by fifty states, entered into force on 21 March 1994 and its ratification process reached a number of 197 actors of

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[218] Benson and Craig, *The End of Sustainability* (2017), 56. See also Thomas L. Friedman, "Global Weirding Is Here," *New York Times* (February 17, 2010) <https://www.nytimes.com/2010/02/17/opinion/17friedman.html> (accessed on 2019.12.29).

[219] Anne K. Armstrong et al, *Communicating Climate Change: A Guide for Educators* (Ithaca, NY: Cornell University Press, 2018), 13-15.

[220] For a comprehensive description of the sources of International Law see, in Portuguese, Jorge Bacelar Gouveia, *Manual de Direito Internacional Público: Uma Perspetiva de Língua Portuguesa*, 5th ed., Updated, Reprint (Coimbra: Almedina, 2019), 131-298.

international law – including all member states of the UN, the State of Palestine, Niue, Cook Islands and the European Union (EU). In its article 2, the UNFCCC sets the objective of achieving a "stabilization of greenhouse gas emissions at a level that would prevent dangerous anthropogenic interference with the climate system." This objective of avoiding the mentioned "dangerous" interference includes the need to keep levels of greenhouse gases (GHGs) in values which "allow ecosystems to adapt naturally to climate change, ensure that food production is not threatened and enable economic development to proceed in a sustainable manner."

Even before the adoption of the UNFCCC, the World Meteorological Organization (WMO) sponsored the First World Climate Conference – held on 12-23 February 1979 in Geneva –, having also established with the United Nations Environment Programme (UNEP), in 1988, the Intergovernmental Panel on Climate Change (IPCC), as a clear recognition of climate change as a critical global challenge for the future of the mankind and all the living species. Moreover, the holding of the Second World Climate Conference in Geneva, in November 1990, and the creation by the UN General Assembly of an Intergovernmental Negotiating Committee (INC), tasked with negotiating the Convention, represented key contributions to drafting a framework on climate change.

Since the Rio Summit, in 1992, the UN has then held diverse global meetings on the drafting, negotiation and implementation of international agreements to collectively address climate change. In addition to the conferences of the parties (COPs) of the UNCFCCC, usually taking place each year from 1995,[221] also other relevant conferences or summits took place, such as the General Assembly Special Session on the Environment (1997); the World Summit on Sustainable

[221] The exception was in 2001, when two COPs took place in the same year, in Bonn, Germany (COP 6), and Marrakech, Morocco (COP 7).

Development (2002); the UN Conference on Sustainable Development (2012); and the UN Sustainable Development Summit (2015).

Regarding the COPs, special importance in the field of climate change is given to COP 3, Kyoto, Japan. This meeting adopted the Kyoto Protocol, which outlined the greenhouse gas emissions reduction obligation certain countries, along with mechanisms such as emissions trading, clean development mechanism and joint implementation. COP 11, Montreal, Canada, also marked the first Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP 1) since the adoption of the Kyoto Protocol.[222]

And in 2015, COP 21/CMP 11, Paris, France, adopted the Paris Agreement, which intended to solve the problems of application of the Kyoto Protocol.

These actions from part of the UN demonstrate the awareness of international community in what regards the identification of environmental uncertainty, particularly climate change, and how international law has already been developing frameworks to address a large variety of existing problems. Moreover, solutions may require economic or social changes rather and not only simple pollution-prevention fixes.[223]

Urban environments are major contributors to the reality of climate change. Accounting for less than 2 per cent of the Earth's surface, cities consume 78 per

[222] With regard to the US position on this issue, it must be mentioned that US signed the Protocol on 12 November 1998, during the Clinton presidency. However, to become binding in the US, the agreement had to be ratified by the Senate, which did not happen. Presidente Clinton never submitted it to the Senate for ratification and his successor George W. Bush decided on the same way. In addition to that, in 2011, also Canada, Japan and Russia stated that they would not take on further Kyoto targets. See Suraje Dessai, Nuno S. Lacasta, and Katharine Vincent, "International Political History of the Kyoto Protocol: from The Hague to Marrakech and Beyond," *International Review for Environmental Strategies*, Vol. 4, No. 2 (2003), 183-205 <https://www.iges.or.jp/en/publication_documents/pub/peer/en/1147/IRES_Vol.4-2_183.pdf>.

[223] Daniel Bodansky, *The Art and Craft of International Environmental Law* (Cambridge, MA: Harvard University Press, 2011), 31.

cent of the world's energy and are responsible for the production of more than 60 per cent of greenhouse gas emissions.[224]

The large density of people using fossil fuels makes urban populations and the territories where they live highly vulnerable to the effects of climate change. And when green spaces are fewer, the problem is exacerbated. In accordance with the conclusions of the Intergovernmental Panel on Climate Change (IPCC), the implementation of measures for limiting global warming to 1.5 degrees Celsius would "require rapid and far-reaching transitions in uses of energy, land, urban and infrastructure (including transport and buildings), and industrial systems."[225]

One of the added challenges for this problem is the projection, in UN Report *2018 Revision of World Urbanization Prospects*,[226] that more than another 2.5 billion people will reside in urban areas by 2050. Moreover, nearly 90 per cent of them will live in Asian and African cities.

Trying to face this problems, urban administrators around the world have already decided to take measures to reduce GHGs and are enacting policies in order to encourage citizens to make use of new alternative energy sources.[227] However, urban decision- and lawmakers need to demonstrate more preoccupation to accelerate to keep pace with this growth in population and the increasing climate change.

In addition to these difficulties, the effects of a changing climate generate more problems among poor and low-income communities. Most of them live on the

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[224] See United Nations, "Cities and Pollution contribute to climate change" <https://www.un.org/en/climatechange/cities-pollution.shtml> (accessed on 2019.12.29).

[225] IPCC, *Global Warming of 1.5ºC* (Geneva: IPCC, 2018), 17 <https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf> (accessed on 2019.12.29).

[226] See WUP.

[227] Examples of these measures can be consulted on the webpage of "UN Climate Summit: Cities" <https://unfccc.int/news/un-climate-summit-cities> (accessed on 2019.12.29).

margins of society, under very unstable structures, and in areas that are usually more susceptible to flooding, landslides, earthquakes. Inadequate capacities, inadequate resources, and reduced access to emergency response systems are also serious and actual problems that need to be addressed, namely in urban environments. Moreover, the mentioned problems are even more pronounced in developing countries, especially in the so-called "Global South".[228]

In order to find strategies and solutions for the problems of climate change in the urban world, the most relevant international entities in the area of cities, such as UN-Habitat, UNEP, the World Bank, and Cities Alliance, decided to establish the Joint Work Programme. The aim of this programme is, therefore, assisting urban governments and authorities located in developing countries in fostering environmental policymaking for sustainable and inclusive cities.[229]

An example of this work that is being implemented at global level is the case of Jamaica, where UN-Habitat's Cities and Climate Change Initiative (CCCI) supported the use of "planning as a long-term tool for climate compatible cities."[230] Implementing partnerships with the local administrators, and NGOs, and communities, the programme has been improving communication to better inform residents on climate-resilient activities.

With respect to pollution, it is broadly accepted as mostly associated as a by-product of urban landscapes and linked with climate change. These realities have been aggravated by the burning of fossil fuels, especially in transportation and industries, increasing CO_2 emissions (one of the most critical GHG) and intensifying global warming.

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[228] Adriana Allen et al, *Environmental Justice and Urban Resilience in the Global South* (New York: Palgrave Macmillan, 2017).

[229] More information on the Joint Working Programme is available on Cities Alliance's webpage <https://www.citiesalliance.org/JWP-GlobalAgendas> (accessed on 2019.12.29).

[230] See United Nations, "Cities and Pollution contribute to climate change."

In the report *Air Pollution and Child Health: Prescribing Clean Air*, the World Health Organization (WHO) concluded on the following key findings:

a) Air pollution affects neurodevelopment, leading to lower cognitive test outcomes, negatively affecting mental and motor development;
b) Air pollution is damaging children's lung function, even at lower levels of exposures;
c) Globally, 93% of the world's children under 15 years of age are exposed to ambient fine particulate matter (PM2.5) levels above WHO air quality guidelines, which include the 630 million of children under 5 years of age, and 1.8 billion of children under 15 years;
d) In low- and middle-income countries around the world, 98% of all children under 5 are exposed to PM2.5 levels above WHO air quality guidelines. In comparison, in high-income countries, 52% of children under 5 are exposed to levels above WHO air quality guidelines;
e) More than 40% of the world's population – which includes 1 billion children under 15 – is exposed to high levels of household air pollution from mainly cooking with polluting technologies and fuels;
f) About 600,000 deaths in children under 15 years of age were attributed to the joint effects of ambient and household air pollution in 2016;
g) Together, household air pollution from cooking and ambient (outside) air pollution cause more than 50% of acute lower respiratory infections in children under 5 years of age in low- and middle-income countries; and
h) Air pollution is one of the leading threats to child health, accounting for almost 1 in 10 deaths in children under five years of age.[231]

[231] The report is available on the WHO webpage <https://www.who.int/news-room/detail/29-10-2018-more-than-90-of-the-world%E2%80%99s-children-breathe-toxic-air-every-day> (accessed on 2019.12.29).

For these reasons, WHO concludes on the recommendation to urban authorities to enact and implement policies such as those to reduce air pollution, better waste management, the use of clean technologies and fuels for household cooking, heating, and lighting, in order to improve the quality of air and life of inhabitants in their homes.

In effect, the decrease of GHG and air pollution are presented as goals of the UNEP's Share the Road Programme, which encourages citizens' options for walking and cycling.[232]

An example of projects endorsed by UN in this area is the award-winning bike-sharing scheme in Hangzhou. The Chinese city started out to provide public transport, encouraging people to get out of their cars, and ended up alleviating traffic congestion, which drastically improved air quality.[233]

Another significant international initiative that puts WHO, the Climate and Clean Air Coalition (CCAC), and the UNEP together is the global *Breathe Life* campaign,[234] which intends to help mobilising cities and encouraging communities and individuals to protect the planet from the effects of air pollution, promoting the increasing of clean air and reducing the effects of climate change.[235]

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[232] More information on the UN Environment's Share the Road Programme is available on the UNEP's webpage <https://www.unenvironment.org/explore-topics/transport/what-we-do/share-road> (accessed on 2019.12.29).

[233] See "Bicycle comeback amongst initiatives to help Hangzhou cut air pollution," on the UNEP's webpage <https://www.unenvironment.org/news-and-stories/story/bicycle-comeback-amongst-initiatives-help-hangzhou-cut-air-pollution> (accessed on 2019.12.29).

[234] All information available on the Breath Life campaign webpage <https://breathelife2030.org/> (accessed on 2019.12.29).

[235] For all, see again United Nations, "Cities and Pollution contribute to climate change."

2.2. Other environmental conditions and changes

Apart from the reality of climate change, a vast number of conditions and changes could affect both natural and built environments. These conditions and changes are related to the continuous instability and unpredictability in nature, which is not only caused by the extreme changes in climate, but are also part of the natural evolution and responses of the territory, its ecosystems and the communities that live in.[236]

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[236] Aydin Turkyilmaz, Hakan Sevik, Mehmet Cetin, and Elnaji A. Ahmaida Saleh, "Changes in Heavy Metal Accumulation Depending on Traffic Density in Some Landscape Plants," *Polish Journal of Environmental Studies*, Vol. 27, No. 5 (2018), 2277-2284; Philip W. Boyd, Christopher E. Cornwall, Andrew Davison, Scott C. Doney, Marion Fourquez, Catriona L. Hurd, Ivan D. Lima, and Andrew McMinn, "Biological responses to environmental heterogeneity under future ocean conditions," *Global Change Biology*, Vol. 22, Issue8 (August 2016), 2633-2650; Matthew Dennis, Richard P. Armitage, and Philip James, "Social-ecological innovation: adaptive responses to urban environmental conditions," *Urban Ecosystems*, Vol. 19 (April 2016), 1063-1082; Michael P. Perring, Pieter De Frenne, Lander Baeten, Sybryn L. Maes, Leen Depauw, Haben Blondeel, María M. Carón, and Kris Verheyen, "Global environmental change effects on ecosystems: the importance of land-use legacies," *Global Change Biology*, Vol. 22, Issue 4 (April 2016), 1361-1371; Giovana O. Fistarol, Felipe H. Coutinho, Ana Paula B. Moreira, Tainá Venas, Alba Cánovas, Sérgio E. M. de Paula Jr., Ricardo Coutinho, Rodrigo L. de Moura, Jean Louis Valentin, Denise R. Tenenbaum, Rodolfo Paranhos, Rogério de A. B. do Valle, Ana Carolina P. Vicente, Gilberto M. Amado Filho, Renato Crespo Pereira, Ricardo Kruger, Carlos E. Rezende, Cristiane C. Thompson, Paulo S. Salomon, and Fabiano L. Thompson, "Environmental and Sanitary Conditions of Guanabara Bay, Rio de Janeiro," *Frontiers in Microbiology*, Vol. 6 (November 2015), 1232; Eric Allan, Pete Manning, Fabian Alt, Julia Binkenstein, Stefan Blaser, Nico Blüthgen, Stefan Böhm, Fabrice Grassein, Norbert Hölzel, Valentin H. Klaus, Till Kleinebecker, E. Kathryn Morris, Yvonne Oelmann, Daniel Prati, Swen C. Renner, Matthias C. Rillig, Martin Schaefer, Michael Schloter, Barbara Schmitt, Ingo Schöning, Marion Schrumpf, Emily Solly, Elisabeth Sorkau, Juliane Steckel, Ingolf Steffen-Dewenter, Barbara Stempfhuber, Marco Tschapka, Christiane N. Weiner, Wolfgang W. Weisser, Michael Werner, Catrin Westphal, Wolfgang Wilcke, and Markus Fischer, "Land use intensification alters ecosystem multifunctionality via loss of biodiversity and changes to functional composition," *Ecology Letters*, Vol. 18, Issue 8 (August 2015), 834-843; Mattheos Santamourisa, and Dionysia Kolokotsab, "On the impact of urban overheating and extreme climatic conditions on housing, energy, comfort and environmental quality of vulnerable population in Europe," *Energy and Buildings*, Vol. 98 (1 July 2015), 125-133; Peter Meyer, "Epigenetic variation and environmental change," *Journal of Experimental Botany*, Vol. 66, Issue 12 (June 2015), 3541-3548; Yann Hautier, David Tilman, Forest Isbell, Eric W. Seabloom, Elizabeth T. Borer, and Peter B. Reich, "Anthropogenic environmental changes affect ecosystem stability via

2.2.1. Natural environments

In order to understand what natural environments are, it is essential to understand what the environment is. Considered in its broadest sense, environment is understood as including water, air, soil, flora and fauna.[237] According to the text of the 1972 Stockholm Declaration, also "especially representative samples of natural ecosystems" are included in the definition of environment.[238]

The concept of environment could cover, as presented by Larsson:

> "all those elements which in their complex inter-relationships form the framework, setting and living conditions for mankind, by their very existence or by virtue of their impact".[239]

However, when it comes to the reality of natural environments, the Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011,

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biodiversity," *Science*, Vol. 348, Issue 6232 (17 April 2015), 336-340; Johan Ehrlén, and William F. Morris, "Predicting changes in the distribution and abundance of species under environmental change," *Ecology Letters*, Vol. 18, Issue 3, (March 2015), 303-314; Joshua H. Guy, Glen B. Deakin, Andrew M. Edwards, Catherine M. Miller, and David B. Pyne, "Adaptation to Hot Environmental Conditions: An Exploration of the Performance Basis, Procedures and Future Directions to Optimise Opportunities for Elite Athletes," *Sports Medicine*, Vol. 45, Issue 3 (March 2015), 303-311; H.N.L. Nwankwoala, "Causes of Climate and Environmental Changes: The need for Environmental-Friendly Education Policy in Nigeria," *Journal of Education and Practice*, Vol.6, No.30 (2015), 224-234; M. G. Phiri Ibrahim and R. Saka Alex, "The Impact of Changing Environmental Conditions on Vulnerable Communities in the Shire Valley, Southern Malawi," in Cathy Lee and Thomas Schaaf (eds.), *The Future of Drylands* (Dordrecht: Springer, 2008), 545-559.

[237] The English Environment Protection Act 1990, defines the "environment" as consisting "of all, or any, of the [media] the air, water and land; and the medium of air includes the air within buildings and the air within other natural or man-made structures above or below ground," see Section 1(2) <http://www.legislation.gov.uk/ukpga/1990/43> (accessed on 2019.12.29).

[238] See Principle 2 in the Declaration of the UN Conference on Human Environment, Stockholm 1972 <https://www.ipcc.ch/apps/njlite/srex/njlite_download.php?id=6471> (accessed on 2019.12.29).

[239] Marie-Louise Larsson, *Legal Definitions of the Environment and of Environmental Damage* (Leiden: Brill, 1999), 156.

on the assessment of the effects of certain public and private projects on the environment,[240] when referring to the location of projects, gives examples of "natural environments", such as:

> "(i) wetlands;
>
> (ii) coastal zones;
>
> (iii) mountain and forest areas;
>
> (iv) nature reserves and parks;
>
> (v) areas classified or protected under Member States' legislation; special protection areas designated by Member States pursuant to Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds and to Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;
>
> (vi) areas in which the environmental quality standards laid down in Union legislation have already been exceeded;
>
> (vii) densely populated areas;
>
> (viii) landscapes of historical, cultural or archaeological significance."[241]

These are examples of the natural environments which can be affected by instability, uncertainty, and disruptive, or even where inequality can be present. And some of these natural environments can also be found within the urban territories, such as those considered as densely populated areas or places of historical, cultural or archaeological significance.

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[240] Directive 2011/92/EU <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011L0092> (accessed on 2019.12.29) has been amended in 2014 by Directive 2014/52/EU https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0052> (accessed on 2019.12.29).

[241] Annex III of the Directive, on the Selection criteria referred to in Article 4(3), regarding case-by-case examination to exempt a specific project in whole or in part from the provisions laid down in the Directive.

2.2.2. Built environments

Investments in neighbourhood-built environments are considered as important for increasing physical activity, overall health, and wellbeing. However, their disproportionate distribution between advantaged and disadvantaged neighbourhoods naturally inflates disparities.[242] Therefore, scholarship literature in this area usually aims at identifying changes in built environments in neighbourhoods and investigating associations between high levels of change and sociodemographic characteristics, while making use of geographic information systems (GIS), neighbourhood land-use, local destinations (for walking, social engagement, and physical activity), and socio-demographics. On this issue and as a example of research in this area, Hirsch et al observed that changes in the built environment are occurring in neighbourhoods across a diverse set of US metropolitan areas, but are patterned such that they may lead to increased health disparities over time.[243]

Following the ideas of Bergman and Heer, built environments in neighbourhoods are important in the construction of social cohesion of urban environments. In places where certain social tensions or ecological instability exist, it is of interest to mind the built environment of those neighbourhoods. In fact, due to occurring socio-spatial segregation in different spaces of the city,

[242] Jana A. Hirsch, Joe Grengs, Amy Schulz, Sara D. Adar, Daniel A. Rodriguez, Shannon J. Brinese, and Ana V. Diez Roux, "How much are built environments changing, and where?: Patterns of change by neighborhood sociodemographic characteristics across seven U.S. metropolitan areas," *Social Science & Medicine*, Vol. 169 (November 2016), 97-105.

[243] Jana A. Hirsch, Joe Grengs, Amy Schulz, Sara D. Adar, Daniel A. Rodriguez, Shannon J. Brines, and Ana V. Diez Roux, "How much are built environments changing, and where?: Patterns of change by neighborhood sociodemographic characteristics across seven U.S. metropolitan areas," *Social Science & Medicine*, Vol. 169 (2016), 97-105 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5075249/> (accessed on 2019.12.29).

certain areas of urban environments can lead to social cohesion on smaller levels such as on the local, neighbourhood level instead as on the societal level.[244]

Depending on the location within the city (in an older or newer, richer or poorer area), each neighbourhood naturally has its very own set of characteristics in its built environment. These characteristics can be differently related to the prevailing social and ecological cohesion or lack of it. However, in disadvantaged neighbourhoods, cohesion is most likely related to the quality of neighbouring in order to deal with the decaying and neglected environment. On the other hand, in more advantaged neighbourhoods, it is often the quality of the actual neighbourhood itself that can improve people's lives, hold them together, and therefore cause social cohesion and possibly environmental quality.[245]

Problems and virtues of built environments and their surroundings can improve wellbeing and connect inhabitants with each other, giving more space for civic engagement to deal with problems. Thus, based on Bergman and Heer's conclusions previously mentioned, if advantaged built environments more easily improve cohesion, it is essential to find policy and even legal solutions to improve that same cohesion in those more disadvantaged neighbourhoods.

3. Social inequalities in cities

With respect to inequalities in urban territories, the concept of urban justice should be introduced. In fact, this expression usually suggests a set of policies and interventions in urban environments, with the aim of correcting the

[244] Els Bergman and Judith de Heer, *Social Cohesion and Everyday Built Environments* (Utrecht: Utrecht University, 2018) <https://dspace.library.uu.nl/handle/1874/368655> (accessed on 2019.12.29).

[245] Bergman and Heer, *Social Cohesion and Everyday Built Environments* (2018).

problems of social and spatial segregation and promoting equal access to space in the city.[246]

This reality expresses the general goals of correcting the inequities that are present in the functioning of contemporary cities all over the planet. It is based on a constant demand for eradicating poverty and exclusion, access to decent housing, a minimum wage, social security schemes, and public services for citizens. In more developed societies, the idea of urban justice tries to combat processes of marginalisation of vulnerable communities and intends to correct the dynamics of real estate speculation, as well as the contrasts in the treatment of the different neighbourhoods by local governments. Its objectives intend to encourage more practical and concrete interventions in the correction of inequalities amongst populations and a set of principles of improvement in the daily management of urban space.[247]

The 2015 United Nations Climate Change Conference in Paris (COP21), which approved the Paris Agreement, highlighted the relevance of cities in climate action. In addition, the unjust burdens borne by the world's most disadvantaged peoples in addressing climate impacts were also emphasised.[248]

From a more economic perspective, Baum-Snow et al recently used economic and population census data to estimate flexible aggregate production function that could facilitate evaluating mechanisms through which the gaps between the average wages of more and less educated workers have become more positively

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[246] Rubén C. Lois González, "Urban Justice," in Anthony M Orum (ed.), *The Wiley Blackwell Encyclopedia of Urban and Regional Studies* (Hoboken, NJ: Wiley, 2019), 1-6; Oomen, Davis, and Grigolo (eds.), *Global Urban Justice: The Rise of Human Rights Cities* (2016).

[247] González, "Urban Justice" (2019).

[248] See more about the Paris Climate Change Conference – November 2015 (COP21) on UNFCC webpage <https://unfccc.int/process-and-meetings/conferences/past-conferences/paris-climate-change-conference-november-2015/paris-climate-change-conference-november-2015> (accessed on 2020.01.01).

related with city size since 1980. Their conclusions indicated that a secular increase in the bias of agglomeration economies toward skilled labour has been central for directly generating greater increases in wage inequality in larger cities.[249]

Therefore, Shi et al intended to document the barriers to redressing the drivers of social vulnerability as part of urban local climate change adaptation efforts and evaluate how emerging adaptation plans impact marginalized groups. Based on this work, the authors presented a roadmap to reorient research on the social dimensions of urban climate adaptation around four issues of equity and justice, focusing on the following solutions: (1) broadening participation in adaptation planning; (2) expanding adaptation to rapidly growing cities and those with low financial or institutional capacity; (3) adopting a multilevel and multi-scalar approach to adaptation planning; and (4) integrating justice into infrastructure and urban design processes.[250]

These are only some forms of analysing and addressing problems of inequality in urban spaces. In the following paragraphs, a number of insights on inequality are discussed, as well as evidence, causes and effects.[251]

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[249] Nathaniel Baum-Snow, Matthew Freedman, and Ronni Pavan, "Why Has Urban Inequality Increased?," *American Economic Journal: Applied Economics*, Vol. 10, Issue 4 (2018), 1-42.

[250] Linda Shi, Eric Chu, Isabelle Anguelovski, Alexander Aylett, Jessica Debats, Kian Goh, Todd Schenk, Karen C. Seto, David Dodman, Debra Roberts, J. Timmons Roberts, and Stacy D. VanDeveer, "Roadmap towards justice in urban climate adaptation research," *Nature Climate Change*, Vol. 6, (2016), 131-137.

[251] For a substantial analysis on discrimination and equality, see Helena Pereira de Melo, *Implicações Jurídicas do Projeto do Genoma Humano: Constituirá a Discriminação Genética uma Nova Forma de Apartheid?*, Colectânea Bioética Hoje, XIV (Coimbra: Gráfica de Coimbra, 2007).

3.1. Insights from the right to the city

In this era of unprecedented uncertainty and instability, increased and exacerbated by climate change and growing environmental precarity, theories of justice must be urgently capable of addressing and accounting for the emerging different challenges of urban environments.

This is the reason why, in the last decades social activists, urban policy specialists, and urban administrative institutions have been revisiting the concept of the "right to the city."[252] Examples of these developments are legal framings of the right in national legislation, such as in Brazil's City Statute of 2001 (Law No. 10.257), the constitutional recognition of the right in Ecuador's 2008 Constitution,[253] or the ongoing policy development work under the scope of UN-Habitat mission, which recently resulted in the agreement of the *New Urban Agenda*, after the UN-Habitat III Conference in 2016.[254]

With respect to Brazil's City Statute, it is a legal framework which provides the implementation of a comprehensive urban policy throughout the whole country,

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[252] Peter Marcuse, "Rights in Cities and the Right to the City?," in Ana Sugranyes and Charlotte Mathivet (eds.), *Cities for All: Proposals and Experiences towards the Right to the City* (Santiago: Habitat International Coalition, 2010), 89-100.

[253] Article 31 provides that "Persons have the right to fully enjoy the city and its public spaces, on the basis of principles of sustainability, social justice, respect for different urban cultures and a balance between the urban and rural sectors. Exercising the right to the city is based on the democratic management of the city, with respect to the social and environmental function of property and the city and with the full exercise of citizenship." See Ecuador's Constitution of 2008, on the *Constitute Project* <https://www.constituteproject.org/constitution/Ecuador_2008.pdf> (accessed on 2020.02.09).

[254] See Edésio Fernandes, "Constructing the 'Right to the City' in Brazil," *Social & Legal Studies*, Vol. 16, Issue 2, (2007), 201-219; Edésio Fernandes, "The City Statute and the Legal-Urban Order," in Celso Santos Carvalho, and Anaclaudia Rossbach (org.), *The City Statute of Brazil: A Commentary* (São Paulo: Cities Alliance and Ministry of Cities, 2010), 55-70 <https://www.citiesalliance.org/sites/default/files/CA_Images/CityStatuteofBrazil_English_fulltext.pdf> (accessed on 2019.12.29); and HABITAT III, "Quito Declaration on Sustainable Cities and Human Settlements for All" (2016) <http://habitat3.org/wp-content/uploads/N1639668-English.pdf> (accessed on 2019.12.29).

intending to regularise informal settlements, prioritise social functions of urban land over its commercial values, and provide mechanisms for the democratic and participative involvement of urban inhabitants in planning and governance.[255]

According to Huchzermeyer, there is a need for scholars to engage with these types legal formulations of the right to the city in order to shape their interpretation, and situate them as an "opening" towards more substantial forms of urban justice.[256] Nevertheless, there is suspicion in much of the literature that these legal and state incorporations of the right to the city constrain the concept's critical edge. In fact, the "right" was first suggested by the radical philosopher and sociologist Henri Lefebvre, within the specific political scene of revolutionary events of May 1968.[257]

The mentioned philosopher understood the idea of right to the city as a political demand for a radical democratic form of participation in the collective appropriation of space.[258] For Lefebvre, it would be a claim encompassing the rights of all inhabitants within the territory of the city to access infrastructures, services, and spaces of the city, to occupy its centre, and to directly intervene in the re/production of urban space. As an assertion of the entitlement of all human urban inhabitants to collaborate in the construction and reconfiguration of space

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[255] Fernandes, "Constructing the 'Right to the City' in Brazil" (2007), 201-219; and Abigail Friendly, "The Right to the City: Theory and Practice in Brazil," *Planning Theory & Practice*, Vol. 14, Issue 2 (2013), 158-179.

[256] Marie Huchzermeyer, "The Legal Meaning of Lefebvre's the Right to the City: Addressing the Gap between Global Campaign and Scholarly Debate," *GeoJournal*, Vol. 83, No.3, (2017), 631-644.

[257] Lefebvre, *Le Droit à la Ville* (1968); on the critiques of the juridification of the right to the city, see Marcelo Lopes de Souza, "Which right to which city? In defence of political-strategic clarity," *Interface: a journal for and about social movements*, Vol. 2, No. 1 (May 2010), 315-333; and Sergio Belda-Miquel, Jordi Peris Blanes, and Alexandre Frediani, "Institutionalization and Depoliticization of the Right to the City: Changing Scenarios for Radical Social Movements," *International Journal of Urban and Regional Research*, Vol. 40, Issue 2 (March 2016), 321-339.

[258] Mark Purcell, "Excavating Lefebvre: The right to the city and its urban politics of the inhabitant," *GeoJournal*, Vol. 58, No.2 (2002), 99-108; and Chris Butler, *Henri Lefebvre: Spatial politics, Everyday Life and the Right to the City* (Abingdon: Routledge, 2012).

and its use values, it was an alternative to the domination of space by exchanging value, capital, and the technocratic expertise of state bureaucracies.[259] Lefebvre did not rely on the liberal capitalist state to act in the public interest. On the contrary, he believed in the need of emancipatory political tendencies to be created by the self-management or *autogestion* of the urban space.[260]

Most of the discourse on the right to the city is anthropocentric. In fact, it would benefit from incorporating thinking with more than human elements and the roles played by them in urban space and urban life. The relation of the individual (or the community) is not only with the external forces of the wealthier or the state. It is a more complex, embodied, relational, intersubjective and co-constituting material relations.[261] And here ecological systems must also be included.

Given that urban environments are not exclusively human creations or habitats, the right to the city should be understood as to be exercised by more-than-human collectives, i.e. social-ecological systems. Actually, environmental justice – and also the idea of resilience justice – demonstrates that cities, and the interconnection between human rights and the environment, cannot be understood apart from their legal, institutional, and political-economic contexts and characteristics.[262]

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[259] Henri Lefebvre, "From the Social Pact to the Contract of Citizenship," in Stuart Elden, Elizabeth Lebas, and Eleonore Kofman (eds.), *Henri Lefebvre: Key Writings* (New York: Continuum, 2003), 238-254.

[260] Henri Lefebvre, *The Production of Space* (Oxford: Blackwell, 1991), 68-168; Souza, "Which right to which city? In defence of political-strategic clarity" (2010), 315-333; and Ed Rose, "Generalized Self-management: The Position of Henri Lefebvre," *Human Relations*, Vol. 31, Issue 7 (1978), 617-630.

[261] Kathryn McNeilly, "After the Critique of Rights: For a Radical Democratic Theory and Practice of Human Rights," *Law and Critique*, Vol. 27, Issue 3 (2016), 269-288.

[262] For all, Natalie Osborne, Anna Carlson, and Chris Butler, "Human rights to the city: urban ecologies and Indigenous justice," in James R. May, and Erin Daly (eds.), *Human Rights and the*

3.2. Evidence

The movement of transformation of real property into financial instruments in the last decades could be presented as an example of evidence that has been worsening urban justice and increasing (or at least maintaining) inequality among populations living in cities. *Financialisation* is not the only cause of the lack of affordable housing and consequent inequalities. It is the increasing of financialisation, combined with open and free markets, globalisation, and the constraint of state-sponsored social welfare, underlies the cases of inequities produced by property investment. It is, however, possible to utilise financial instruments in order to achieve greater justice, depending on the will of decision- and lawmakers. In fact, increasing flexibility in approaches to new construction and mostly to regeneration could enable an improved distribution of the benefits of urban development and reduce inequalities.[263]

With regard to more general urban issues, the provision and management of public spaces and services in the city frequently generates conflicts and disputes of varying intensity among inhabitants and between them and urban authorities. And this happens where inequality is more visible. On this issue, Low and Iveson developed a model of socially just public space that could inform analysis of, and interventions in, these conflicts. While dialoguing with different literatures on urban public space and on social and spatial justice, and specifically looking at the reality of New York, they intended to offer five propositions about what makes public space more just. The suggested propositions would concern distributive justice, recognition, interactional justice and encounter, care and

Environment: Legality, Indivisibility, Dignity and Geography, Elgar Encyclopedia of Environmental Law, Vol. VII (Cheltenham: Elgar, 2019), 436-446.

[263] Susan Fainstein, "Financialisation and justice in the city: A commentary," *Urban Studies*, Vol. 53, Issue 7 (May 2016), 1503-1508.

repair, and procedural justice. They could serve as ground for policymaking in all cities, if adapted to each case and reality.[264]

3.3. Causes and effects

Recalling the already mentioned causes and effects of urbanisation, inequalities and injustice in urban environments are also strictly connected to those first ones.

With the contribution of migration to urbanisation and urban population growth, cities expanded, urban poverty grew, and more people have been exposed to risks. Therefore, in most of the cities all around the world, migrants form a large part of the urban poor with whom they share low-income and non-income disadvantages, including strong difficulties in finding adequate housing and in accessing city services. Like most of the members of urban poor communities, they work long hours in low-paid, insecure and unsafe jobs and are exposed to a wide range of environmental hazards. This happens because a large number of low-income and informal settlements lack basic infrastructure and expose inhabitants to environmental injustice.[265]

Urbanisation is, therefore, strongly connected to social inequality, not only from an economic point of view, but also regarding environmental risks and health outcomes, with special concern with children.[266] Climate change and the need for

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[264] Setha Low, and Kurt Iveson, "Propositions for more just urban public spaces," *City: analysis of urban trends, culture, theory, policy, action*, Vol. 20, Issue 1 (2016), 10-31.

[265] Cecilia Tacoli, Gordon McGranahan, and David Satterthwaite, "Urbanisation, rural-urban migration and urban poverty," IIED Working Paper (London: IIED, 2015) <https://pubs.iied.org/10725IIED/> (accessed on 2019.12.29).

[266] Szabo et al, "Is Rapid Urbanisation Exacerbating Wealth-Related Urban Inequalities in Child Nutritional Status? (2018), 630-651; and Sylvia Szabo, "Urbanisation and Intra-urban Inequalities in Nutritional Outcomes," in Sylvia Szabo (ed.), *Urbanisation and Inequalities in a Post-Malthusian Context: Challenges for the Sustainable Development Agenda* (Cham: Springer, 2016), 79-102.

more resilience are urgent urban issues that need to be addressed by decision- and lawmakers, through more equality enhancing approaches.[267]

Following the suggestions of Satterthwaite, in order to reduce urban inequalities, action is urgent in public agendas such as (i) economic success in attracting and retaining investment for job creation; (ii) addressing and reducing urban poverty; (iii) building the information base and capacity to act on disaster risk; (iv) adaptation to climate change, including building resilience to its direct and indirect impacts; and (v) contribution to GHG emission reduction.[268]

4. Systemic responses

In order to face uncertainty and inequalities within communities and territories, especially under the increasing influence of climate change, mitigation and adaptation appear to be the most adequate responses used in climate change science.[269]

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[267] Patrick Le Galès, "The Political Sociology of Cities and Urbanisation Processes: Social Movements, Inequalities and Governance," in Suzanne Hall, and Ricky Burdett (eds.), *The SAGE Handbook of the 21st Century City* (London: SAGE, 2018), 215-234; Satterthwaite, "Inequalities in environmental risks and resilience within urban populations in low- and middle-income nations" (2017), 108-125; and David Castells-Quintana, and Vicente Royuela, "Are Increasing Urbanisation and Inequalities Symptoms of Growth?," *Applied Spatial Analysis and Policy*, Vol. 8, Issue 3 (September 2015), 291-308.

[268] Satterthwaite, "Inequalities in environmental risks and resilience within urban populations…" (2017), 124.

[269] Mia Landauer et al, "The role of scale in integrating climate change adaptation and mitigation in cities," *Journal of Environmental Planning and Management*, Vol. 62, Issue 5 (2019), 741-765; Diana Reckien et al, "How are cities planning to respond to climate change? Assessment of local climate plans from 885 cities in the EU-28," *Journal of Cleaner Production*,Vol. 191 (1 August 2018), 207-219; Cynthia Rosenzweig and William Solecki, "Action pathways for transforming cities," *Nature Climate Change*, Vol. 8 (2018), 756-759; Monica Di Gregorio et al, "Climate policy integration in the land use sector: Mitigation, adaptation and sustainable development linkages," *Environmental Science & Policy*, Vol. 67 (January 2017), 35-43; Nadja Kabisch et al, "Nature-based solutions to climate change mitigation and adaptation in urban areas: perspectives on indicators, knowledge

4.1. Mitigation

Regarding these issues, an important distinction must be made, in order to continue studying the issues of climate change, uncertainty, and social-ecological resilience in urban environments. It is the difference between the concepts of mitigation and adaptation. The distinction is important for the subject matter of this dissertation, because, when facing vulnerabilities, decision- and lawmakers must find solutions to mitigate harms or to adapt social-ecological systems to uncertainty and change, or even to do both.

In fact, this is all about how society addresses climate change and the problems and uncertainties it causes, including the differentiation of legal authorities to act to address climate change's causes and effects.

Urban environments are considered as the core of the global climate change mitigation and strategic low-carbon development.[270] They shelter more than half of the world population and responsible for three quarters of global energy consumption and GHG. In order to face this reality, public authorities enact mitigation policies and assessment measures on energy, transport, construction, and service sectors. Because of its goals and results, the mitigation of climate

gaps, barriers, and opportunities for action," *Ecology and Society*, Vol. 21, Issue 2 (2016): 39 <https://www.ecologyandsociety.org/vol21/iss2/art39/> (accessed on 2019.12.29); Sarah Burch et al, "Urban Climate Governance through a Sustainability Lens: Exploring the Integration of Adaptation and Mitigation in Four British Columbian Cities," in Craig Johnson, Noah Toly, and Heike Schroeder (eds.), *The Urban Climate Challenge: Rethinking the Role of Cities in the Global Climate Regime* (New York: Routledge, 2015), 119-137; Mia Landauer et al, "Inter-relationships between adaptation and mitigation: a systematic literature review," *Climatic Change*, Vol. 131, Issue 4 (August 2015), 505-517; Diana Reckien et al, "The Influence of Drivers and Barriers on Urban Adaptation and Mitigation Plans – An Empirical Analysis of European Cities," *PLOS ONE*, Vol. 10, Issue 8 (2015): e0135597 <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0135597> (accessed on 2019.12.29).

[270] For all, see Zhifu Mi et al, "Cities: The core of climate change mitigation," *Journal of Cleaner Production*, Vol. 207 (10 January 2019), 582-589.

change in cities is closely connected to urban sustainable development, and consequently to social-ecological resilience justice (which will be explained further). In fact, strong relationships exist between climate change mitigation with urbanization, ecosystems, air pollution, and extreme events.[271]

According to IPCC:

> "Many adaptation and mitigation options can help address climate change, but no single option is sufficient by itself. Effective implementation depends on policies and cooperation at all scales and can be enhanced through integrated responses that link mitigation and adaptation with other societal objectives."[272]

Still under the IPCC scope, the Working Group I (WG I)[273] defines mitigation as "A human intervention to reduce the sources or enhance the sinks of greenhouse gases."[274] However, the IPCC Working Group III (WG III)[275] concretizes it as:

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[271] Mi et al, "Cities…" (2019), 582-589.

[272] See Topic 4 of IPCC, *Climate Change 2014 Synthesis Report* (2015) <http://ar5-syr.ipcc.ch/index.php> (retrieved on 2018.12.29).

[273] IPCC Working Group I (WG I) assesses the physical scientific aspects of the climate system and climate change. The main topics assessed by WG I include: changes in greenhouse gases and aerosols in the atmosphere; observed changes in air, land and ocean temperatures, rainfall, glaciers and ice sheets, oceans and sea level; historical and paleoclimatic perspective on climate change; biogeochemistry, carbon cycle, gases and aerosols; satellite data and other data; climate models; climate projections, causes and attribution of climate change. See more about IPCC WG I on its webpage <https://wg1.ipcc.ch/> (accessed on 2019.12.29).

[274] Glossary of Terms used in the *IPCC Fourth Assessment Report*, WG I, Annex I: Glossary <https://www.ipcc.ch/pdf/glossary/ar4-wg1.pdf> (accessed on 2019.12.29).

[275] IPCC Working Group III is responsible for assessing options for mitigating climate change through limiting or preventing greenhouse gas emissions and enhancing activities that remove them from the atmosphere. The main economic sectors are taken into account, both in a near-term and in a long-term perspective. The sectors include energy, transport, buildings, industry, agriculture, forestry, waste management. The WG analyses the costs and benefits of the different approaches to mitigation, considering also the available instruments and policy measures. The approach is more and more solution-oriented. See more about IPCC WG III on its webpage <https://www.ipcc-wg3.ac.uk/> (accessed on 2019.12.29).

> "Technological change and substitution that reduce resource inputs and emissions per unit of output. Although several social, economic and technological policies would produce an emission reduction, with respect to climate change, mitigation means implementing policies to reduce GHG emissions and enhance sinks." [276]

In effect, mitigation consists of defining and implementing measures (or interventions) which result on the reduction of GHG emissions and, consequently, on the decreasing of the growth of global temperature. It is taking decisions (or from a legal perspective, enacting legislation) to reduce the effects of climate change, very often with multi-level approaches.[277]

From the perspective of Natural England, mitigation is

> "the need to reduce the long term risk to the natural environment from climate change, by being an active participant in overall efforts to reduce greenhouse gas emissions."[278]

Climate change mitigation policies can also be divided into two categories, which are quantity-based mechanism (e.g., carbon emission trading) and price-based mechanism (e.g., carbon tax).[279]

4.2. Adaptation

On the other hand, adaptation is defined by the IPCC Working Group II (WG II) as an "adjustment in natural or human systems in response to actual or expected

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[276] Glossary of Terms used in the *IPCC Fourth Assessment Report*, WG III, Annex I: Glossary <https://www.ipcc.ch/pdf/glossary/ar4-wg3.pdf> (accessed on 2019.12.29).

[277] Julia Harker, Prue Taylor, and Stephen Knight-Lenihan, "Multi-level governance and climate change mitigation in New Zealand: lost opportunities," *Climate Policy*, Vol. 17, Issue 4 (2017), 485-500.

[278] Natural England, "The natural environment: Adapting to climate change" (2008), 1 <www.naturalengland.org.uk> (accessed on 2019.12.29).

[279] Mi et al, "Cities: The core of climate change mitigation" (2019), 582-589.

climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities."[280]

Under this definition, adaptation can be characterized as: (i) "anticipatory", when it takes place before impacts are observed – it is also referred to as proactive adaptation; (ii) "autonomous", when it does not constitute a conscious response to climatic stimuli but is triggered by ecological changes in natural systems and by market or welfare changes in human systems – it is also referred to as spontaneous adaptation; and (iii) "planned", when it is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state.[281]

According to the IPCC WG III, adaptation can be defined as:

> "Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Various types of adaptation exist, e.g. anticipatory and reactive, private and public, and autonomous and planned. Examples are raising river or coastal dikes, the substitution of more temperature shock resistant plants for sensitive ones, etc."[282]

In practice, the concept is characterised by the decision and implementation of solutions which may increase the capacity of social and ecological systems to live and evolve with the new realities brought by climate change (usually external disturbances), dealing with actions to reduce vulnerability. In this case, it does

[280] IPCC Working Group II is responsible for assessing the vulnerability of socio-economic and natural systems to climate change, negative and positive consequences of climate change, and options for adapting to it. It also takes into consideration the inter-relationship between vulnerability, adaptation and sustainable development. See more about IPCC WG II on its webpage <http://www.ipcc-wg2.awi.de/> (accessed on 2019.12.29).

[281] Glossary of Terms used in the *IPCC Fourth Assessment Report*, WG II, Appendix I: Glossary. <https://www.ipcc.ch/pdf/glossary/ar4-wg2.pdf> (accessed on 2019.12.29).

[282] Glossary of Terms used in the *IPCC Fourth Assessment Report*, WG III, Annex I: Glossary. Id.

not consist of trying to reduce the effects, but to coexist and thrive with those effects while dealing with the uncertain phenomena. [283]

The British non-departmental public body *Natural England* describes adaptation as "[t]he need to increase the capacity of the natural environment to cope with unavoidable climate change." And this organisation considers adaptation as its primary focus when addressing climate change.[284]

These concepts and the differences between them can have significant importance in what regards the purposes of law and governance surrounding the protection of the environment, and most specifically tackling uncertainty and climate change. It is different if an administrative decision or a legal act intends to implement mitigation or adaptation, because certainly the addressees are different and the realities that are intended to be regulated are also diverse.[285] However, in order to face or tackle uncertainty, climate change decision- and

[283] See Heleen Mees, "Local governments in the driving seat? A comparative analysis of public and private responsibilities for adaptation to climate change in European and North-American cities," *Journal of Environmental Policy & Planning*, Vol. 19, Issue 4 (2017), 374-390; Araos et al, "Climate change adaptation planning in large cities…" (2016), 375-382; Bin Kashem et al, "Planning for Climate Adaptation…" (2016), 304-318; Davide Geneletti and Linda Zardo, "Ecosystem-based adaptation in cities: An analysis of European urban climate adaptation plans," *Land Use Policy*, Vol. 50, (January 2016), 38-47; Paul Lehmann et al, "Barriers and opportunities for urban adaptation planning: analytical framework and evidence from cities in Latin America and Germany," *Mitigation and Adaptation Strategies for Global Change*, Vol. 20, Issue 1 (January 2015), 75-97; Landauer et al, "Inter-relationships between adaptation and mitigation…" (2015) 131, 505-517; Lorraine Sugar et al, "Synergies between climate change adaptation and mitigation in development: case studies of Amman, Jakarta, and Dar es Salaam," *International Journal of Climate Change Strategies and Management* 5 (2013), 95-111; Jessica M. Ayers and Saleemul Huq, "The value of linking mitigation and adaptation: a case study of Bangladesh," *Environmental Management* 43 (2009), 753-764; David A. King, "Climate Change Science: Adapt, Mitigate, or Ignore?," *Science*, Vol. 303, Issue 5655 (2004), 176-177; Thomas J. Wilbanks et al, "Possible responses to global climate change: integrating mitigation and adaptation," *Environment: Science and Policy for Sustainable Development*, Vol. 45, (2003), 28-38.

[284] Natural England, "The natural environment: Adapting to climate change" (2008).

[285] In this sense, see Reinhard Steurer and Christoph Clar, "The ambiguity of federalism in climate policy-making: how the political system in Austria hinders mitigation and facilitates adaptation," *Journal of Environmental Policy & Planning*, Vol. 20, Issue 2 (2018), 252-265.

law-making must make use of both responses and, furthermore, focus on more resilience for the social-ecological systems that are intended to be regulated.[286]

4.3. Social-ecological resilience

The previously mentioned terms of mitigation of harms and vulnerabilities and adaptation to disturbances brought by climate change have a strong relation with the resilience of social and ecological systems, and the need of those systems to achieve it too. Although they are arguably different concepts, together they play an important role in tackling uncertainty and climate change.[287]

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[286] Benoit Mayer, "Construing International Climate Change Law as a Compliance Regime," *Transnational Environmental Law*, Vol. 7, Issue 1 (March 2018), 115-137; Tiffany H. Morrison et al, "Mitigation and adaptation in polycentric systems: sources of power in the pursuit of collective goals," *WIREs Climate Change*, Vol. 8, Issue 5 (September/October 2017), e479, 1-16 <https://onlinelibrary.wiley.com/doi/pdf/10.1002/wcc.479> (accessed on 2019.12.29); Andreas Fleig et al, "Legislative Dynamics of Mitigation and Adaptation Framework Policies in the EU," *European Policy Analysis*, Vol. 3, Issue 1, Contemporary Issues of Policy-Making Across Europe (Spring 2017), 101-124; Daniel Bodansky et al, *International Climate Change Law* (Oxford: Oxford University Press, 2017), 12-14, 131-137; Raya Marina Stephan, "Climate change considerations under international groundwater law," *Water International*, Vol. 42, Issue 6 (2017), 757-772; and Harriett Bulkeley, "Cities and Governance," in Richard Plunz, and Maria Paola Sutto (eds.), *Urban Climate Change Crossroads* (Abingdon: Routledge, 2016), 29-38.

[287] Raffaele Lafortezza et al, "Nature-based solutions for resilient landscapes and cities," *Environmental Research*, Vol. 165 (August 2018), 431-441; Thomas F. Thornton and Claudia Comberti, "Synergies and trade-offs between adaptation, mitigation and development," *Climatic Change*, Vol. 140, Issue 1 (January 2017), 5-18; Federica Ravera et al, "Gender perspectives in resilience, vulnerability and adaptation to global environmental change," *Ambio*, Vol. 45, Supplement 3 (December 2016), 235-247; Gertrud Hatvani-Kovacs et al, "Heat stress risk and resilience in the urban environment," *Sustainable Cities and Society*, Vol. 26 (October 2016), 278-288; Rico Kongsager et al, "Addressing Climate Change Mitigation and Adaptation Together: A Global Assessment of Agriculture and Forestry Projects," *Environmental Management*, Vol. 57, Issue 2 (February 2016), 271-282; Ross Gillard et al, "Transformational responses to climate change: beyond a systems perspective of social change in mitigation and adaptation," *WIREs Climate Change*, Vol. 7, Issue 2 (March/April 2016), 251-265; Abid Mehmood, "Of resilient places: planning for urban resilience," European Planning Studies, Vol. 24, Issue 2 (2016), 407-419; Pam M. Berry et al, "Cross-sectoral interactions of adaptation and mitigation measures," *Climatic Change*, Vol. 128, Issue 3-4 (February 2015), 381-393; Gonzalo Lizarralde et al, "Sustainability and

Today, resilience is a trendy expression or a buzzword, which is used (and abused) for a myriad of different purposes and realities. Then, there are also those who do not intend to use the term resilience but still talk about it.[288] Nevertheless, it can be applied at various and multidisciplinary levels, and to diverse sciences and cases, from psychology to ecology or engineering, from sociology to the governance of territories and cities.[289] And even to law.[290]

The term resilience was originally introduced in ecological literature by the words of Holling, as a property or characteristic which:

> "determines the persistence of relationships within a system and […] a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist."[291]

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resilience in the built environment: The challenges of establishing a turquoise agenda in the UK," *Sustainable Cities and Society*, Vol. 15 (July 2015), 96-104; Emilie Cameron et al, "Translating Climate Change: Adaptation, Resilience, and Climate Politics in Nunavut, Canada," *Annals of the Association of American Geographers*, Vol. 105, Issue 2 (2015), 274-283; Martina K. Linnenluecke and Andrew Griffiths, *The Climate Resilient Organization: Adaptation and Resilience to Climate Change and Weather Extremes* (Cheltenham: Elgar, 2015), 107-158.

[288] Magali Reghezza-Zitt et al, "What Resilience Is Not: Uses and Abuses," *Cybergeo: European Journal of Geography [En ligne]*, Environnement, Nature, Paysage, document 621 (2012) <http://journals.openedition.org/cybergeo/25554> (accessed on 2019.12.29).

[289] Steven M. Southwick et al, "Resilience definitions, theory, and challenges: interdisciplinary perspectives," *European Journal of Psychotraumatology*, Vol. 5 (2014), 25338. On the topic of cities, one project which should be emphasized is the "100 Resilient Cities" initiative from the Rockefeller <https://www.100resilientcities.org/> (accessed on 2019.12.29).

[290] Merely as examples, see Robin Kundis Craig, "Trickster Law: Promoting Resilience and Adaptive Governance by Allowing Other Perspectives on Natural Resources Management," *Arizona Journal of Environmental Law & Policy* (Forthcoming), University of Utah College of Law Research Paper No. 301 (January 27, 2019) <https://ssrn.com/abstract=3323945> (accessed on 2019.12.29); Robert L. Fischman, "Letting Go of Stability: Resilience and Environmental Law," *Indiana Law Journal*, Vol. 94 (2019), 689-725; Barbara A. Cosens et al, "The role of law in adaptive governance," *Ecology and Society*, Vol. 22, Issue 1: 30 (2017), 1-12 <https://www.ecologyandsociety.org/vol22/iss1/art30/> (accessed on 2019.12.29); and Olivia Odom Green et al, "Barriers and bridges to the integration of social-ecological resilience and law," *Frontiers in Ecology and the Environment*, Vol. 13, Issue 6 (August 2015), 332-337.

[291] Holling, "Resilience and Stability of Ecological Systems" (1973), 1-23.

Moreover, Brown presents a selective set of different meanings of resilience across fields, as follows:

> "[t]he ability to absorb disturbances, to be changed and then to reorganise and still have the same identity (retain the same basic structure and ways of functioning";
>
> "[i]n the context of exposure to significant adversity, resilience is both the capacity of individuals to navigate their way to the psychological, social and physical resources that sustain their well-being, and their capacity individually and collectively to negotiate for these resources to be provided in culturally meaningful ways"; and
>
> "[a] multi-dimensional construct (…) the capacity of individuals, families, communities, systems and institutions to respond, withstand and/or judiciously engage with *catastrophic* events and experiences; actively making meaning without fundamental loss of identity."[292]

However, from a social-ecological perspective and, according to Walker and Salt, resilience should be understood as "the capacity of a system to absorb disturbance and still retain its basic function and structure" [293] or, as understood by Cosens and Fremier,

> "a measure of the amount of perturbation a social-ecological system can withstand while maintaining its structure and functions; it describes the ability of a complex system to continue to provide the full range of ecosystem services in the face of change."[294]

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[292] Katrina Brown, *Resilience, Development and Global Change* (Abingdon: Routledge, 2016), 7.

[293] Brian Walker and David Salt, *Resilience Thinking: Sustaining Ecosystems and People in a Changing World* (Washington, D.C.: Island Press, 2006), xiii.

[294] Barbara A. Cosens and Alexander Fremier, "Assessing system resilience and ecosystem services in large river basins: a case study of the Columbia River Basin," *Idaho Law Review*, Vol. 51, Issue 1 (2014), 91-125.

A resilient system should, therefore, be able to survive disturbances, shocks and surprises, reorganize and reassemble, persisting and maintaining its core elements, functions and identity.[295] And a simple look at what happens around the planet – with so much uncertainty and natural "surprises"– demonstrates that resilience is more than needed. From the turbidity of natural waters to intense fires or heavy hurricanes, ecological systems struggle to be resilient.

Resilience of systems can, therefore, have different meanings, such as the following ones:

a) *strength to resist* to possible disturbances and changes, i.e. maintenance of function;
b) *recovery capacity* to bounce back from shocks and disasters, i.e. return to function;
c) *flexibility to adapt* to changing conditions, i.e. evolution of function; and
d) *transformative capacity* to use disturbances and changes to restructure itself in desired ways, i.e. transformation of function.[296]

In fact, when Gunderson and Holling coined the term *panarchy* to describe the cross-scalar relationships between linked adaptive cycles[297], they accomplished to demonstrate that resilience theorists must understand systems to be linked across many scales, continuously informing each other.[298] And cities, because of their complexity and specific uncertainty, are privileged places to be analysed and managed through this perspective. Urban ecosystems are, in fact,

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[295] Bridget M. Hutter, "Risk, resilience and inequality: current dilemmas in environmental regulation," in Bridget M. Hutter (ed.), *Risk, Resilience, Inequality and Environmental Law* (Cheltenham: Edward Elgar, 2017), 21.

[296] Arnold, "Adaptive law" (2018), 171-172.

[297] For the concept of *panarchy*, see Lance H. Gunderson and C. S. Holling (eds.), *Panarchy: Understanding Transformations in Human and Natural Systems* (Washington D.C.: Island Press, 2002).

[298] Barbara Brown Wilson, *Resilience for All: Striving for Equity Through Community-Driven Design* (Washington D.C.: Island Press, 2018), 8.

"intertwined systems of natural and hand-made services."[299] And this is why they are places urging for social-ecological resilience.

At this point, when analysing natural and social systems, resilience would mean the capacity of a system to withstand disturbances and maintain the basic processes and structures of the systems or, as better explained, the amount of disturbance that the system could absorb before reorganizing into a new state characterized by a different set of processes and structures.[300]

From an institutional perspective, administration decision-making and legal systems can play a paramount catalyst role for fostering or enhancing resilience, not only from a social perspective but also form an ecological point of view. Law regulates practices and conducts among the society – between individuals or between individuals and public or private entities – and similarly in the relation between people and ecosystems or natural resources. Consequently, law must also focus on implementing social-ecological resilience, from law-making to litigation and judicial adjudication.[301]

Simultaneously, legal frameworks are usually seen as rigid or crystallising realities, when they are maladaptive.[302] However, if making use of adequate and flexible legal tools, lawyers and legal experts can give a huge contribution to the

[299] Abhas K. Jha et al (eds.), *Building Urban Resilience: Principles, Tools, and Practice* (Washington D.C.: The World Bank, 2013), 29.

[300] Arnold and Gunderson, "Adaptive Law and Resilience" (2013), 10426-10443.

[301] At this purpose, see Craig Anthony (Tony) Arnold and Leigh A. Jewel, "Litigation's Bounded Effectiveness and the Real Public Trust Doctrine: The Aftermath of the Mono Lake Case," *Hastings West-Northwest Journal of Environmental Law and Policy*, Vol. 14, No. 1, (Winter 2008), 1177-1212; and Craig Anthony (Tony) Arnold, "Working Out an Environmental Ethic: Anniversary Lessons From Mono Lake," *Wyoming Law Review*, Vol. 4, No. 1 (2004), 1-55.

[302] Ahjond S. Garmestani et al, "Panarchy, Adaptive Management and Governance: Policy Options for Building Resilience," *Nebraska Law Review*, Vol. 87 (2009), 1036-1054.

future of the protection of communities and environments in a continuously changing planet.[303]

At a first glance, flexibility and legal certainty could be understood as clashing elements. Nevertheless, it is possible to find legal solutions which can make possible for both realities to live to coexist, especially when regulating uncertainty.[304]

Therefore, the way how law can be more flexible and adaptive, in a way that enhances resilience justice and protects environmental rights will be discussed along this dissertation, with the specific example of cities.

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[303] Catherine Blanchard et al, "Socio-ecological resilience and the law: Exploring the adaptive capacity of the BBNJ agreement," *Marine Policy*, Vol. 108 (2019), 103612; Robin Kundis Craig et al, "Balancing stability and flexibility in adaptive governance: an analysis of tools available in U.S. environmental law," *Ecology and Society*, Vol. 22, Issue 2: 3 (2017), 1-15 <https://www.ecologyandsociety.org/vol22/iss2/art3/> (accessed on 2019.12.29); Daniel A. DeCaro et al, "Legal and institutional foundations of adaptive environmental governance," Ecology and Society, Vol. 22, Issue 1: 32 (2017), 1-20 <https://www.ecologyandsociety.org/vol22/iss1/art32/> (accessed on 2019.12.29); Cortekar et al, "Why climate change adaptation in cities needs customised and flexible climate services" (2016), 42-51; Alejandro E. Camacho and Robert L. Glicksman, "How Program Goals and Processes Shape Federal Land Adaptation to Climate Change," *University of Colorado Law Review*, Vol. 87, Issue 3 (2016), 711-826; and Timothy Meyer, "Institutions and Expertise: The Role of Science in Climate Change Lawmaking," in Cinnamon Piñon Carlarne, Kevin R. Gray, and Richard Tarasofsky (eds.), *The Oxford Handbook of International Climate Change Law* (Oxford: Oxford University Press, 2016), 441-462.

[304] See Susana Goytia et al, "Dealing with change and uncertainty within the regulatory frameworks for flood defense infrastructure in selected European countries," *Ecology and Society*, Vol. 21, No. 4 (Dec 2016), 23 <https://www.ecologyandsociety.org/vol21/iss4/art23/> (accessed on 2020.02.09); Helena F.M.W. van Rijswick, "The Road to Sustainability: How Environmental Law Can Deal with Complexity and Flexibility," *Utrecht Law Review*, Vol. 8, Issue 3 (2012), 1-6.

4.4. Why resilience and not prevention or precaution?

At this point, the option for resilience and not for the preventive principle (or even for the precautionary principle)[305] should be explained in this research, especially because the latter is generally considered as an overarching principle of environmental legislation and policy.[306]

Following Sadeleer's words, when analysing environmental principles, "curative model must be complemented by an administrative policy that sets standards aimed at preventing damage."[307] Thus, the preventive principle forms a prudent complement to other environmental principles, such as the polluter-pays principle, by requiring the adoption of measures intended to prevent damage from arising.[308]

Given that environmental values are very often fragile and non-regenerable, anticipating damaging effects is a determinant option in environmental law and policy. However, prevention not always avoids damages in environmental values. This means that in most of the situations minimising damages is the only option.[309] Uncertainty, instability, and even inequalities in complex social-

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[305] For a current analysis on the precautionary principle from a US perspective, see Cass R. Sunstein, *Laws of Fear: Beyond the Precautionary Principle* (Cambridge: Cambridge University Press, 2005), 35-63. See also, from other perspectives, Nicolas de Sadeleer, "The Precautionary Principle in EC Health and Environmental Law," *European Law Journal*, Vol. 12, Issue 2 (2006), 139-172; Joakim Zander, *The Application of the Precautionary Principle in Practice: Comparative Dimensions* (Cambridge: Cambridge University Press, 2010).

[306] Carla Amado Gomes, *Introdução ao Direito do Ambiente*, 4th ed. (Lisboa: AAFDL, 2018), 130; Maurice Sunkin et al, *Sourcebook on Environmental Law* (London, Sydney: Routledge-Cavendish, 2001), 30.

[307] Nicolas De Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (Cambridge: Cambridge University Press, 2002), 6. See also Nicolas de Sadeleer, *Les Principes du pollueur-payeur, de prevention et the précaution* (Bruxelles: Bruylant, 1999).

[308] Sadeleer, *Environmental Principles* (2002), 61.

[309] Amado Gomes, *Introdução ao Direito do Ambiente* (2018), 131. See also Carla Amado Gomes, "Precaução e proteção do ambiente: da incerteza à condicionalidade," in Jorge Pereira da Silva and Gonçalo Matias (coord.), *Justiça entre Gerações* (Lisboa: Fundação Francisco Manuel dos Santos, 2017), 323-351.

ecological systems, namely those exacerbated by climate change, require more than the application of prevention inspired norms and policies.

A similar argument could be presented with regard to precaution. In effect, strongly grounded on the idea of responsibility,[310] the precautionary principle has been widely incorporated into international, supranational, supranational, and domestic environmental law and regulation.[311]

This provision in a large number of instruments led to some authors, such as Hughes to assert that, when analysing precaution, "it is necessary to consider what kinds of harms, and what degree of evidence about these harms, would satisfy its trigger conditions."[312] On the same direction, some other authors also

[310] See Nathan Dinneen, "Precautionary discourse: Thinking through the distinction between the precautionary principle and the precautionary approach in theory and practice," *Politics and the Life Sciences*, Vol. 32, Issue 1 (2013), 2-21; René von Schomberg, "The precautionary principle and its normative challenges," in Elizabeth Fisher, Judith Jones, and René von Schomberg (eds.), *Implementing the Precautionary Principle: Perspectives and Prospects* (Cheltenham: Edward Elgar, 2006), 19-41; Hans Jonas, "The Imperative of Responsibility: In Search of an Ethics for the Technological Age," *Human Studies*, Vol. 11, Issue 4 (1984), 419-429.

[311] The precautionary approach was famously included in the Principle 15 of the Rio Declaration on Environment and Development 1992. Moreover, within the context of the EU, Article 191 of the TFEU details the precautionary principle, aiming at ensuring a higher level of environmental protection through preventative decision-taking in the case of risk, and then for avoiding environmental setbacks. See Alexandra Aragão, "Desenvolvimento sustentável em tempo de crise e em maré de simplificação. Fundamento e limites da proibição de retrocesso ambiental," *Estudos em homenagem ao Prof. Doutor José Joaquim Gomes Canotilho*, Vol. IV, Stvdia Ivridica 105 (Coimbra: Faculdade de Direito da Universidade de Coimbra, 2012), 43-90.

[312] Jonathan Hughes, "How Not to Criticize the Precautionary Principle," *Journal of Medicine and Philosophy*, Vol. 31 (2006), 447-464, 452.

criticise the principle for its apparent vagueness,[313] incoherence,[314] or even adverse effects.[315]

Nevertheless, as noted by Ahteensuu:

> "the popularity and highlighted nature of the [precautionary principle] may reflect a change in people's fundamental values and world-views and/or a changed situation with regard to the inducement and management of environmental threats and health hazards is also worth noticing. Lastly, taking absolutely no precaution would be immoral from the ethical point of view and irrational from the decision theory's point of view."[316]

This means that prevention and precaution will still maintain their extreme relevance for provision and application of environmental law, even if not sufficient for the protection of social-ecological systems in a fast-changing world.

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[313] See Andrew Jordan and Timothy O'Riordan, "The precautionary principle in contemporary environmental policy and politics," in Carolyn Raffensperger and Joel Tickner (eds.), Protecting public health and the environment: implementing the precautionary principle (Washington, DC: Island Press, 1999), 15-35: "[t]he precautionary principle is vague enough to be acknowledged by all governments regardless of how well they protect the environment."

[314] See Sunstein, *Laws of Fear* (2005), 14-15, considering that "[t]he real problem with the Precautionary Principle in its strongest forms is that it is incoherent; it purports to give guidance, but it fails to do so, because it condemns the very steps that it requires. The regulation that the principle requires always gives rise to risks of its own − and hence the principle bans what it simultaneously mandates (…) The principle threatens to be paralysing, forbidding regulation, inaction, and every step in between."

[315] See Sunstein, *Laws of Fear* (2005), 31-32: "[i]n 2002, the United States government donated thousands of tons of corn to the Zambian government, which refused the corn on the ground that it likely contained some GM kernels. The Precautionary Principle lay at the foundation of the refusal (…) a "conservative scenario" from the World Health Organization predicted that at least 35,000 Zambians would die of starvation if more corn could not be found"; and Daniel Bodansky, "Scientific uncertainty and the precautionary principle," *Environment: Science and Policy for Sustainable Development*, Vol. 33, Issue 7 (1991), 43: "[m]any of today's most serious problems were unanticipated and would probably not have been prevented even if regulators had chosen the cautious approach. CFCs and DDT, for example, were viewed as environmentally benign when first developed. The problem was not that state regulators permitted their use in the face of uncertainties, but that scientists did not test for the right types of environmental impacts."

[316] Marko Ahteensuu, "Defending the Precautionary Principle Against Three Criticisms," *TRAMES*, Vol. 11, No. 4 (2007), 366-381.

Due to the complexity, instability and uncertainty, which have been increased by the reality of climate change, resilience thinking and practice are now additional essential instruments for tackling complex future challenges to be faced by territories and communities who live in.[317] And, as this dissertation intends to demonstrate, law and governance urgently need to incorporate this perspective within their frameworks.

5. Inadequacies of existing legal and governance regimes

As it was already explained, cities need to be resilient, both at social and ecological levels. Since they are human settlements – and most of them are increasing their dimensions, becoming more complex and unequal –, they need to be capable to withstand or adapt to the various possible disturbances, while maintaining the same basic structures and functions as social-ecological systems that they are.[318]

Usually, cities and local communities are subject to national law and regulation, which are very often maladaptive. This reality makes the processes of adaptation more difficult. The functioning of cities has, necessarily, to be guided in accordance to the local and specific realities and happenings of those territories and communities.

As Arnold argues, while analysing US law, current national legal systems are maladaptive to the possible disturbances and/or changes occurring in complex, interconnected social-ecological systems in at least the following three respects:

> "1) [The legal system] seeks to impose and protect stability and certainty in human affairs, often with narrow or singular goals and methods. Think of

[317] For all, see Walker and Salt, *Resilience Thinking* (2006); Walker and Salt, *Resilience Practice* (2012).
[318] See Walker and Salt, *Resilience Thinking* (2006), xiii.

> the role of precedent in judicial decision making or the protection of long-established property rights.
>
> 2) U.S. laws are based on assumptions about a globally stable nature, which is at odds with current scientific understandings of natural systems. Think of laws protecting existing populations of endangered species in their existing habitats and locations or basing water-supply planning on historic conditions.
>
> 3) Legal processes require up-front prescriptive decision making and treat elements of nature and society in fragmented ways."[319]

These conclusions specifically apply to the reality of US law, as under the common law tradition. However, they might also be applied, *mutatis mutandis*, to other legal systems, including European law, as a legal system which has been influenced both by civil law and common law.[320] In effect, the mentioned conclusions apply to law and to local regulation and governance. And both political and technical decision-making must be aware of the natural and normal changes of systems.

Here again, the relevance of accompanying the evolution of different systems should be stressed, including the example of making use of already mentioned ICTs for monitoring and assessing changes and uncertain realities.

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[319] Arnold, "Resilient Cities and Adaptive Law" (2014), 251.

[320] Fernanda G. Nicola, "National Legal Traditions at Work in the Jurisprudence of the Court of Justice of the European Union," *The American Journal of Comparative Law*, Vol. 64, Issue 4 (1 December 2016), 865-889; Vivian Grosswald Curran, "Romantic Common Law, Enlightened Civil Law: Legal Uniformity and the Homogenization of the European Union," *Columbia Journal of European Law*, Vol. 7 (2001), 63-126 <https://ssrn.com/abstract=1301689> (accessed on 2020.02.09); Thijmen Koopmans, "The Birth of European Law at the Crossroads of Legal Traditions," *The American Journal of Comparative Law*, Vol. 39, No. 3 (Summer, 1991), 493-507.

Since the characteristic of adaptation was already introduced above, it is at this point possible to argue that it represents an essential capability for social-ecological systems to achieving the needed resilience.

Systems of people and nature are resilient if they are able to withstand disturbances or, in other words, if they have the capacity of evolving as systems – keeping their identifying characteristics –, while suffering those mentioned disturbances.

According to Arnold, four types of resilience could be identified, being them resilience as (i) a maintenance of function; (ii) a return to function; (iii) an evolution of function; and (iv) a transformation of function.[321]

This is a reason working on resilience is a way of recognising the evolution of social-ecological systems. It is expected that those systems live in connection with a complexity and multiplicity of other systems. They face uncertainty and eventually they suffer disturbances, cause by others.

Nevertheless, this evolution of systems must happen without losing their identity. And this means that, if resilience is implemented, a "natural"[322] evolution of the systems happens. There is a simultaneous evolution and maintenance of their functions.

In effect, regarding the example of governance, Arnold et al. demonstrate the clear relation between adaptation and evolutionary characteristics, when analysing the Anacostia River watershed governance. The author considers that governance processes which move through different iterations, with incremental

[321] Arnold, "Adaptive law" (2018), 186.

[322] In this sense, the term "natural" is used a something which is normal, accepting uncertainty and disturbances as a natural part of any evolutionary process.

but meaningful changes demonstrate an adaptive evolutionary characteristic, "in contrast to rigidity and entrenchment in some governance systems."[323]

At the same time, while analysing the relation between concepts related to the management for resilience, such as adapting management and co-management, Boyd and Folke also refer that:

> "[…] the link to resilience gave the concepts depth by explicitly connecting the social with the dynamics of ecological systems and vice versa, recognising their coevolutionary interdependence […]."[324]

These are only some of the multiple cases which can demonstrate that a system, in order to be resilient, must be capable to adapt and that is part of its evolution. Any resilient system can hardly evolve and overcome a process in which it suffers the natural disturbances without being able to adapt.

5.1. Climate change laws and governance

When studying how to address climate change, it is important to understand its meaning, and simultaneously the role played by the United Nations Framework Convention on Climate Change (UNFCCC), among the international legal system to face this global issue.

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[323] Craig Anthony (Tony) Arnold et al, "The Social-Ecological Resilience of an Eastern Urban-Suburban Watershed: The Anacostia River Basin," *Idaho Law Review*, Vol. 51 (2014), 82 <https://www.uidaho.edu/-/media/UIdaho-Responsive/Files/law/law-review/articles/volume-51/51-1-arnold-craig-anthony-etal.ashx?la=en&hash=29A9C06A9C794A070040091923B1DA1417EBB39B> (accessed on 2020.01.06).

[324] Emily Boyd and Carl Folke, "Conclusions: adapting institutions and resilience," in Emily Boyd and Carl Folke (eds.), *Adapting institutions: governance, complexity, and social-ecological resilience* (Cambridge: Cambridge University Press, 2012), 265. This interpretation also follows the ideas of Miguel A. Gual and Richard B. Norgaard, "Bridging ecological and social systems coevolution: a review and proposal," *Ecological Economics*, Vol. 69 (2010), 707–717.

The large range of problems affecting the atmosphere spreads across the full scale of human activities and wellbeing. From toxic fumes that are emitted from industrial plants, to usual activities including lighting a simple fire, driving a car, or using spray-on deodorant. Pollutants assume many forms and shapes, with the main ones including the following: (i) gases produced from combustion process[325]; (ii) sulphur dioxide (SO_2); (iii) particulates of lead and other heavy metals; (iv) PM_{10} and $PM_{2.5}$; (v) complex pollutants produced by the incomplete combustion fuels; (vi) volatile organic compounds (VOCs); (vii) chlorofluorocarbons (CFCs); and (viii) methane.

Most of the already mentioned sources are human-made, but there are also natural sources, such as soil dust from large areas of land with little or no plant life, dust and SO_2 from volcanic eruptions and smoke from wild fires. Forests and other land uses play and important role capturing CO_2 and locking it away (at least in the short term). CO_2 trading schemes intend to calculate annual emissions from industrial and other human-made processes.[326]

The more significant effects of pollution are human-induced climate change, ozone depletion, acid rain and ecological harms, and direct harm to human health. Climate changes will also have an impact on ground-level air quality and in the increases of temperature, raising the chances of diseases and deaths caused by heat (within other problems).[327]

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[325] Such as carbon monoxide (CO), carbon dioxide (CO2), and oxides of nitrogen (NOx).

[326] See more about the EU Emissions Trading System (EU ETS) <https://ec.europa.eu/clima/policies/ets_en> (accessed on 2019.12.29); also see Directive 2003/87/EC of 13 October 2003, establishing a scheme for greenhouse gas emission allowance trading within the Community <https://eur-lex.europa.eu/eli/dir/2003/87/oj> (accessed on 2019.12.29) and Directive (EU) 2018/410 of 14 March 2018, amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments <https://eur-lex.europa.eu/eli/dir/2018/410/oj> (accessed on 2019.12.29).

[327] For all, see Bell et al., *Environmental Law* (2017), 530-533.

The Intergovernmental Panel on Climate Change (IPCC) tried to define it through the following description:

> "(…) a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity."[328]

In effect, the UNFCCC was one of the first possible legal steps that the international community has been using to face realities such as (a) the earth's continuous changing climate; (b) the assumption that those changes are the result of human activity; (c) the knowledge that the referred changes are happening at a faster rate and with larger impacts than previously predicted; and (d) the need of immediate in order to prevent the utmost destructive and irreversible impacts from the mentioned changing climate.[329]

Although there may be divergencies regarding its human or natural causes, climate change was defined by the UNFCCC in its Article 1(2) as:

> "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."

As it is possible to verify, the UNFCCC adopted a position which is different of the already mentioned definition presented by the IPCC. In fact, when defining climate change, the IPCC expressly stated that its "(…) usage differs from that in

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[328] Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Geneva: IPCC, 2007), 30.

[329] Hunter et al, *International Environmental Law and Policy* (2015), 610.

the United Nations Framework Convention on Climate Change (…)".[330] This divergence was connected to the different interpretations that are often used by proponents or opponents of an environmental action to advance their own view.

The creation of the IPCC and negotiation of the UNFCCC could be considered as key triggers from the global community in order to ensure effectiveness in a new International Climate Change Law, namely because it needed to be as near universal participation as possible. And that is the reason why it required the most minimal of commitments from its signing parties.[331]

One interesting characteristic of the differentiated obligations of states in the UNFCCC is that, according to Article 4(2), it provided that developed countries should aim to return their emissions of GHG to 1990 values.[332]

The UNFCCC suffered important developments with the Kyoto Protocol.[333] In recent times, with the Paris Agreement, it also ended to receive the ratification from the United States – in contrast to what happened with the that previous instrument. Meanwhile, the Trump Administration announced in 2017 that the US would leave the Paris Agreement.[334] However, this presidential decision was only one moment – even if relevant – in the history of the UNFCCC and its successive instruments. Continuous negotiations and developments under the scope of the UNFCCC are larger and deeper than single positions demonstrated by states.

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[330] See IPCC, *Climate Change 2007: Synthesis Report* (2007), 30.

[331] In this sense, Angela Williams, "Climate Change Law: Creating and Sustaining Social and Economic Insecurity," *Social & Legal Studies*, Vol. 20, Issue 4 (2011), 499-513.

[332] Daniel Bodansky, *The Art and Craft of International Environmental Law* (2011), 13-14.

[333] But not with the needed long-lasting support from the US and Canada. See Daniel Bodansky, *The Art and Craft of International Environmental Law* (2011), 113-115, 225-226, 230; Bell et al, *Environmental Law* (2017), 544-547.

[334] Statement by President Trump on the Paris Climate Accord, Issued on: June 1, 2017 <https://www.whitehouse.gov/briefings-statements/statement-president-trump-paris-climate-accord/> (accessed on 2019.12.29).

According to the interpretation presented by Louka, the:

> "climate change discourse has been influenced by the inability of scientists to reach consensus on whether climate change really exists and its possible repercussions."[335]

However, despite of political positions, there is now scientific consensus that climate change exists and most of it is human caused.[336]

At this point, it is also important to discern the phenomena of climate change from that of *global warming*, which are clearly differentiated by the worldwide reputed US National Aeronautics and Space Administration (NASA) as separate realities. From the perspective of the North American agency:

> "climate change refers to a broad range of global phenomena created predominantly by burning fossil fuels, which add heat-trapping gases to Earth's atmosphere. These phenomena include the increased temperature trends described by global warming, but also encompass changes such as sea level rise; ice mass loss in Greenland, Antarctica, the Arctic and mountain glaciers worldwide; shifts in flower/plant blooming; and extreme weather events."[337]

On the other hand, NASA defines global warming as:

> "the upward temperature trend across the entire Earth since the early 20th century, and most notably since the late 1970s, due to the increase in fossil

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[335] Elli Louka, *International Environmental Law. Fairness, Effectiveness, and World Order* (Cambridge: Cambridge University Press, 2006), 20.

[336] James N. Druckman and Mary C. McGrath, "The evidence for motivated reasoning in climate change preference formation," *Nature Climate Change*, Vol. 9 (2019), 111-119; Sander van der Linden et al, "Inoculating the Public against Misinformation about Climate Change," *Global Changes*, Vol. 1, Issue 2 (February 27, 2017), 1600008; and Riley E. Dunlap et al, "The Political Divide on Climate Change: Partisan Polarization Widens in the U.S.," *Environment: Science and Policy for Sustainable Development*, Vol. 58, Issue 5 (2016), 4-23.

[337] See NASA's perspective <https://climate.nasa.gov/resources/global-warming/> (accessed on 2019.12.29).

> fuel emissions since the industrial revolution. Worldwide since 1880, the average surface temperature has gone up by about 0.8 °C (1.4 °F), relative to the mid-20th-century baseline (of 1951-1980)."[338]

In what regards global warming, this term is frequently used as presented in legal instruments, such as in Article 5(3) the Kyoto Protocol – i.e. as global warming potential (GWP).[339]

These definitions demonstrate that, when scientists are addressing climate change and uncertainty as a general reality, there are very different concepts to address and, most of the times, the referred concepts are connected and often interdependent, but they do not exactly correspond the same realities and must be differentiated. Cities are only one of these realities. Moreover, each city is different from the others. And even each neighbourhood can have relevant differences from others within the same city.

The results of this dissertation will be intended to be used in order to find solutions for legislation, decision making, and effective application of law in order to protect environmental rights to the citizens living in certain territories (cities in this specific case) and, simultaneously, find new legal tools for urban mitigation and adaptation to uncertainty, implementing and enhancing resilience justice. And climate change (as presented above) represents one of the

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[338] NASA.

[339] On global warming potential, see the definition presented in the glossary of Susan Solomon et al (eds.)., *Climate Change 2007: The Physical Science Basis, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge, UK and New York, NY: Cambridge University Press, 2007), 946. The term is defined as "An index, based upon radiative properties of well-mixed greenhouse gases, measuring the radiative forcing of a unit mass of a given well-mixed greenhouse gas in the present-day atmosphere integrated over a chosen time horizon, relative to that of carbon dioxide. The GWP represents the combined effect of the differing times these gases remain in the atmosphere and their relative effectiveness in absorbing outgoing thermal infrared radiation. The Kyoto Protocol is based on GWPs from pulse emissions over a 100-year time frame."

major aggravating elements of uncertainty, instability, and inequality in our times.

5.2. Environmental law and governance

The "rise of ecosystem regimes" has been understood as the key for the resolution of the unfolding ecological crises that are affecting territories, communities, and living beings the Anthropocene.[340] These frameworks represent a paradigmatic passage in resolving environmental law's internal contradictions and evident shortcomings. They signal a step-forward in the change from anthropocentric to eco-centric articulations of environmental law.[341] This normative or descriptive grasp, which is informing environmental legal scholarship, could be understood as located within the realm of "critical environmental law" or an "analytics of biopolitics" approach. Indeed, it aims at opening the field of inquiry to new solutions rather than producing closures.

From this viewpoint, rather than a simplified and linear narrative of increasing interpenetration between law and ecology, this analytics of biopolitics transposed to the specific critical environmental legal terrain[342] aims at outlining the slippages that intervene at the margins of intersection between law and ecology, and at articulating a biopolitical critique of both anthropocentric and eco-centric articulations of environmental law.[343]

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[340] Vito De Lucia, "Beyond anthropocentrism and ecocentrism: a biopolitical reading of environmental law," *Journal of Human Rights and the Environment*, Vol. 8, Issue 2 (2017), 181-202.

[341] In this regard, see Klaus Bosselmann and Prue Taylor (eds.), *Ecological Approaches to Environmental Law* (Cheltenham: Edward Elgar, 2017). See also the Ecological Law and Governance Association (ELGA) <https://www.elga.world/> (accessed on 2019.12.29).

[342] See Michel Foucault, *The History of Sexuality. Volume I: An Introduction* (New York: Pantheon Books, 1978), 93.

[343] De Lucia, "Beyond anthropocentrism and ecocentrism: a biopolitical reading of environmental law" (2017), 181-202.

While analysing US frameworks, Arnold suggests that environmental law is today entering a fourth generation.[344] The first generation that was characterised by "command and control regulation" or the "rule-of-law litigation"[345], and technology-based pollution controls.[346] Its role was only to require compliance with rules.[347] A second generation of environmental law sought to:

> "introduce regulatory flexibility, improve efficiency, and harness market incentives through cost-benefit analysis, compliance incentives, market tools, and flexible and negotiated rule-making."[348]

The third generation is understood as a blend of systemic alternatives to the regulation-dominated and market-dominated prior generations.

The new generation, suggested by Arnold, is seen understood as a reaction to and rejection of the prior generations' assumptions that the environment is a static good to preserve, commodify, or sustain. Not rejecting but embracing the characteristics of the previous generations, it is based on the science of resilience and *panarchy*, and recognises natural and human environments as "highly dynamic, shaped by complex and nonlinear interconnections among ecological systems, social systems, and institutions."[349] This is the main basis for a future suggestion of adaptive law tools.

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[344] Craig Anthony (Tony) Arnold, "Fourth-Generation Environmental Law: Integrationist and Multimodal," *William & Mary Environmental Law and Policy Review*, Vol. 35, No. 3 (2011), 771.

[345] A. Dan Tarlock, "The Future of Environmental 'Rule of Law' Litigation," *Pace Environmental Law Review*, Vol. 17 (2000), 237.

[346] Arnold, "Fourth-Generation Environmental Law: Integrationist and Multimodal" (2011), 790.

[347] Craig Anthony (Tony) Arnold, "Environmental Law, Episode IV: A New Hope? Can Environmental Law Adapt for Resilient Communities and Ecosystems?," *Journal of Environmental & Sustainability Law*, Vol. 21, No. 1, (Fall 2015), 5.

[348] Arnold, "Environmental Law, Episode IV" (2015), 5-6.

[349] Arnold, "Environmental Law, Episode IV" (2015), 5-6.

5.3. Urban laws and governance

Depending on the countries and their legal traditions, cities may regulate more or less the different activities within their territories. However, with the increase of urban population and the acceptance that paradigmatic changes can be better implemented from a "bottom-up" approach, urban authorities are starting to enact relevant policies and legislation that can impact social-ecological resilience.[350] One strong example of this trend is the implementation of the *Urban Agenda for the EU*, which is based on principles of multi-level governance, such as (i) supporting better regulation, better funding and better knowledge; (ii) piloting territorial impact assessments; (iii) integrated approaches; and (iv) participation.[351]

Modern urban environments could be seen as engines of production, innovation, and growth. Nevertheless, the movement of urbanisation has been increasing pollution from household consumption and companies' production. Based on these realities, Muller and Jha argue that enforcement of legislation such as the Clean Air Act induces sublinear scaling between emissions, damages, and city dimensions. Their findings suggest that environmental law and policy limits the

[350] Willem Salet and Jochem de Vries, "Contextualisation of policy and law in sustainable urban development," *Journal of Environmental Planning and Management*, Vol. 62, Issue 2 (2019), 189-204; Celso Maran de Oliveira et al, "Right to participate in the urban policies: progress after 15 years of City Statute," *urbe: Revista Brasileira de Gestão Urbana* [online], Vol. 10, no. 2 (2018), 322-334 <http://www.scielo.br/scielo.php?pid=S2175-33692018005002101&script=sci_abstract> (accessed on 2019.12.29).

[351] See European Commission, *Urban agenda for the EU: Multi-level governance in action* (Brussels: European Union, 2019) <https://ec.europa.eu/regional_policy/sources/docgener/brochure/urban_agenda_eu_en.pdf> (accessed on 2019.12.29).

adverse effects of urbanisation without interfering with the productivity benefits that exist in cities.[352]

6. Possible solutions

To face or tackle the problems introduced above, some solutions could be discussed, both at national or more local levels. First of all, the more traditional one (at least for the last decades) is the provision of environmental rights. A second approach could be the introduction of a new theory (or a development) of environmental justice: the idea of a social-ecological resilience justice. And the third concept would be that of adaptive law, as a table of new legal mechanisms which can make legal frameworks more flexible and capable of accompany the dynamics of social and ecological systems, and at the same time help to protect or implement the previous concepts or environmental rights and resilience justice.

6.1. Environmental rights

When analysing rights, it relevant to assess exactly which kind of rights are being studied. From a broad international perspective (and also European), rights are usually seen as "human" rights. And on this issue, it is largely recognized that "the struggle for human rights is as old as history itself, because it concerns the

[352] Nicholas Z. Muller and Akshaya Jha, "Does environmental policy affect scaling laws between population and pollution? Evidence from American metropolitan areas," *PLoS ONE*, Vol. 12, Issue 8 (2017): e0181407 <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0181407> (accessed on 2019.12.29).

need to protect the individual against the abuse of power by the monarch, the tyrant, or the state."[353]

However, the use and study of "fundamental" rights is also extensive in the world and perspectives may differ in dependence of the readers we are addressing to. Therefore, first of all, it should be clarified that it is possible to find in literature almost an infinite list of different definitions and divisions on the doctrine of rights.

Before going further, it is important to make clear, at this point, that rights are to be hereby analysed as claims or entitlements recognised by legal norms or principles.[354]

As explained, literature mentions to "human" vs. "fundamental" rights. Nevertheless, authors likewise tend to make other relevant distinctions, separating: "positive" vs. "negative" rights; "individual" vs. "collective" rights; and "substantive" vs. "procedural" rights.[355]

These are, obviously, some cases of rights' dichotomies, once there could be a longer list of other divisions or oppositions between various types of categories of rights.

6.2. Resilience justice

The topic of resilience is an increasingly relevant urban policy discourse. However, as argued by Wagenaar and Wilkinson, there is an apparent gap

[353] Arthur H. Robertson and J.G. Merrills, *Human Rights in the World: An Introduction to the Study of the International Protection of Human Rights* (Manchester: Manchester University Press, 1996), 9.
[354] See Robert Paul Churchill, "Global Human Right," in Michael Boylan (ed.), *The Morality and Global Justice Reader* (Abingdon: Routledge, 2018), 7-25; Humphreys, "Competing claims: human rights and climate harms" (2009), 159-190.
[355] Boyd, *The Environmental Rights Revolution* (2012), 20-44.

between the advocacy of social-ecological resilience in scientific literature and its acceptance in policy discourse on the one hand, and the demonstrated capacity to implement resilience in practice on the other.[356] Actually, the authors studied this gap by developing a performative account of how social-ecological resilience is dealt with in practice, namely on how (for example) protection of environment and biodiversity was negotiated in response to Melbourne's metropolitan planning options and initiatives. They suggest a "performative account" to expand the possible opportunities for governing for social-ecological resilience beyond the concept's use "as a metaphor, measurement, cognitive frame or programmatic statement of adaptive management/co-management." The authors conclude that it has the potential to emerge through what has been called the everyday "mangle of practice" in response to social-ecological feedback inherent to policy processes.[357]

Moreover, this need for resilience solutions must also be understood as a need for justice, equity, or an equitable capacity for social-ecological resilience. It is a need of communities to have the same access to protection and resilience.

For these reasons, Arnold suggests *resilience justice*, as "the equitable capacity of all human communities to adapt to sudden shocks and changing conditions in ways that help the community to thrive." According to him, this concept goes beyond the domains of climate change or disaster and intends to address disparities and inequalities in the capacities of communities to adapt to a myriad of disturbances and changing conditions.[358] Another form of understanding this

[356] Hendrik Wagenaar and Cathy Wilkinson, "Enacting Resilience: A Performative Account of Governing for Urban Resilience," *Urban Studies*, Vol. 52, Issue 7 (May 2015), 1265-1284.

[357] Wagenaar and Wilkinson, "Enacting Resilience: A Performative Account of Governing for Urban Resilience" (2015).

[358] Arnold, "Adaptive Law" (2018), 185-186.

concept is through the terminology of *just resilience*, introduced by Davoudi[359] and explained by Pieraccini as a condition that is:

> "achieved when the law guarantees inclusive procedures to recognise the diversity of actors and knowledges and the diversity of modes of communication coupled with strict collective monitoring and reviewing in a variety of official and unofficial fora."[360]

6.3. Adaptive law

Bodansky accurately alerted that "the current generation of environmental problems, such as climate change and loss of biodiversity, involve a high degree of scientific uncertainty."[361] And it was already demonstrated hereby that cities are – for good or bad – the most privileged territories for uncertain to bloom. Therefore, it is urgent that legal systems are prepared for it, contributing for building and enhancing the adaptive capacity of cities.[362]

Once everything is constantly changing and adapting, from technologies to nature and even society, also urban communities are expecting for law to be more adaptive and flexible. However, an adaptive legal system must be accompanied by reformed adaptive approaches in planning and governance too, rejecting up-front, comprehensive, long-term, static plans.[363]

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[359] Simin Davoudi, "Just Resilience," *City & Community*, Vol. 17, No. 1 (2018), 3-7.

[360] Margherita Pieraccini, "Towards Just Resilience: Representing and Including New Constituencies in Adaptive Governance and Law," *Journal of Environmental Law*, Vol. 31 (2019), 213-234.

[361] Bodansky, *The Art and Craft of International Environmental Law* (2011), 32.

[362] Arnold, "Resilient Cities and Adaptive Law" (2014), 263.

[363] Craig Anthony (Tony) Arnold, "Adaptive Watershed Planning and Climate Change," *Environmental and Energy Law and Policy Journal*, Vol. 5 (2010), 417, 431-449.

According to the lessons of Arnold and Gunderson, the features of an adaptive legal system and which make it different from conventional and maladaptive law are the following:

> "(1) multiplicity of articulated goals; (2) polycentric, multimodal, and integrationist structure; (3) adaptive methods based on standards, flexibility, discretion, and regard for context; and (4) iterative legal-pluralist processes with feedback loops, learning, and accountability."[364]

Characteristics that conventional law is not used to, but legal frameworks must adapt if they want to accompany the reality of social-ecological systems and enhance their capacity to bring resilience justice to the communities and the populations that live in urban environments. Nevertheless, the topic of adaptive will be further developed in this dissertation, when we discuss the tools of communities to depart from a reality of environmental rights to an objective of resilience justice.

7. Conclusive synthesis

The main point of this section is that it appears that climate change and its effects are to worsen, because the commitment from international community to make the structural changes needed to reduce greenhouse gas emissions adequately is not yet sufficient. Moreover, the uncertainties posed by continuing trends towards climate change create global challenges for adaptation, including the legal and governance tools to facilitate adaptation. In short, international legal frameworks have not yet solved the problems posed by climate change. And will probably continue to find it difficult to solve them. In fact, apparent weak sanctionatory frameworks or systems and the imperfect character of a large

[364] Arnold and Gunderson, "Adaptive Law and Resilience" (2013), 10428.

number of norms of international law can make it difficult to find solutions from a more global perspective.[365]

Summing up the arguments presented until here, it should be stressed that the planet is changing. And being true that this is not a new reality, because uncertainty always existed, the truth is that climate change is becoming a major challenge for territories and communities, especially for those who live in cities.

Once urban areas are the most populated territories on Earth, their number of dwellers does not stop to increase, and a large number of cities is located in coastal regions, those places are particularly vulnerable to uncertainty.

At this point, the capacity of social-ecological systems to adapt in a way to withstand disturbances maintaining their original characteristics must be enhanced. Territories and communities must be helped by law and governance to achieve resilience.

To achieve that, international, regional and national law has been proposing, during the last decades, environmental rights as a possibility to face vulnerabilities. And in what regards urban areas, Lefebvre even suggested a right to the city. Nonetheless, even if understood by some authors as "meta-rules that guide legislators, administrative decision makers, and judges,"[366] environmental rights (and more specifically the constitutional ones) have demonstrated not to

[365] Peter Lawrence and Daryl Wong, "Soft law in the Paris Climate Agreement: Strength or weakness?," *Review of European, Comparative & International Law*, Vol. 26, Issue 3 (November 2017), 276-286; Norichika Kanie, "Governance with Multilateral Governance Agreements: A Healthy or Ill-Equipped Fragmentation?", in Ken Conca and Geoff Dabelko (eds.), *Green Planet Blues: Critical Perspectives on Global Environmental Politics*, 5th ed. (Abingdon: Routledge, 2015), 137-153; John Burrit McArthur, "International Environmental Law: Can it Overcome its Weaknesses to Create an Effective Remedy for Global Warming?," *Santa Clara Journal of International Law*, Vol. 10 (2013), 253-282.

[366] Boyd, *The Environmental Rights Revolution* (2012), 252.

be sufficient for citizens to face uncertainty, and a large number of territories and communities continue to become more and more vulnerable.[367]

The solutions hereby introduced, which will be deeper developed in this study, consist of making use of adaptive law and its flexible tools in order to depart from a state of environmental rights and reach a state or condition of resilience justice. This intended reality would be a public law framework where decision-making, drafting legislation, and applying law would not be static nor crystallising (as well as their processes). It will accompany change and more easily respond to the uncertain disturbances and the feedback loops of social and natural life.

[367] Ruth Krüger, "The silent right : environmental rights in the Constitution Court of South Africa," *Constitutional Court Review*, Vol. 9 No. 1 (2019), 473-496; Lanse Minkler and Nishith Prakash, "The role of constitutions on poverty: A cross-national investigation," *Journal of Comparative Economics*, Vol. 45, Issue 3 (August 2017), 563-581; Chris Jeffords and Lanse Minkler, "Do Constitutions Matter? The Effects of Constitutional Environmental Rights Provisions on Environmental Outcomes," *Kyklos – International Review for Social Sciences*, Vol. 69, Issue 2 (May 2016), 294-335; Christopher Jeffords, "On the temporal effects of static constitutional environmental rights provisions on access to improved sanitation facilities and water sources," *Journal of Human Rights and the Environment*, Vol. 7, Issue 1 (2016), 74-110; Joshua C. Gellers, "Explaining the emergence of constitutional environmental rights: a global quantitative analysis," *Journal of Human Rights and the Environment*, Vol. 6, Issue 1 (2015), 75-97; James R. May and Erin Daly, *Global Environmental Constitutionalism* (Cambridge: Cambridge University Press, 2014) 85-172; Christopher Jeffords, "Constitutional Environmental Human Rights: A Descriptive Analysis of 142 National Constitutions," in Lanse Minkler (ed.), *The State of Economic and Social Human Rights: A Global Overview* (New York: Cambridge University Press, 2013), 329-363.

Chapter III – Frameworks of environmental rights

1. Examples of concepts and typologies of rights

A first approach to the theory of environmental rights must focus on the concepts of rights and how they could be classified.

The bibliography on the concepts and definitions of rights is vast. From the conception of rights based on the components of privilege, claim, power, and immunity[368] (known as "the Hohfeldian incidents" or "Hohfeldian rights"[369]), to the idea of liberties[370], legal literature and jurisprudence have dedicated a large number of studies and analysis to this topic.

Following the words of Miller, Hohfeld's analysis rests upon two fundamental theses: first, a right is a three-term relation involving an individual who is the right-holder, a specific type of action, and one or more other individuals against whom the right is asserted. Second, although "right" as it is used in the law is not a univocal term (no single definition can capture its diverse uses), most assertions of rights can be analysed into, or reduced to, conjunctions of four distinct types of assertions: claim rights (rights *stricto sensu*), privileges (or liberties), powers, and immunities.[371]

From another perspective, Ronald Dworkin defined rights as trumps[372], in the sense that they would prevail above other legal elements. However, today's most

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[368] Wesley Newcomb Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning and Other Legal Essays*, Walter Wheeler Cook (ed.) (New Haven: Yale University Press, 1919), 36.

[369] John Finnis, *Natural Law and Natural Rights*, 2nd ed. (Oxford: Oxford University Press, 2011), 199.

[370] Hillel Steiner, *An Essay on Rights* (Oxford: Blackwell, 1994), 59-60.

[371] Fred D. Miller, Jr., *Nature, Justice, and Rights in Aristotle's Politics* (Oxford: Clarendon Press, 1995), 94.

[372] Ronald Dworkin, "Rights as Trumps," in Jeremy Waldron (ed.), *Theories of Rights* (Oxford: Oxford University Press, 1984), 153-167.

widely accepted definition would be to consider rights more generally as claims or entitlements.[373]

And under the scope of a common law tradition's viewpoint, rights would be considered as associated with remedies which emerged from "hard cases"[374]. According to Miller,

> "[m]ost trials are adversarial in character, with one side anxious to refute the relevance, validity and extent of any right claimed by the other. A right which, whenever tested, persistently fails to live up to expectations will, regardless of its pedigree in international law, either lose that designation or fade into oblivion."[375]

Nevertheless, as we will analyse, in a more general context, from international to national or even local perspectives, rights can be seen as important legal elements for addressing vulnerabilities.

From a Germanic perspective, Jellinek presented three categories of rights that could be accepted. The first one would be that of the "rights of freedom" (*status libertatis*), which have the scope of expanding the personality without the interference of the state; the second category would be that of the "civil rights" (*status civitatis*), which have as scope the positive actions from the state, other public entities and the society as a whole, for the general interest of the community; the third one would be that of the "political rights" (*status activae civitatis*), which has as its scope the intervention of the people in the activity of the state and in the formation of its will.[376]

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[373] See Joseph Raz, *The Morality of Freedom* (Oxford: Clarendon Press, 1988), 218; and Leif Wenar, "The Nature of Claim-Rights," *Ethics*, Vol. 123, No. 2 (January 2013), 202-229.

[374] See Ronald Dworkin, *Taking Rights Seriously* (London: Bloomsbury, 2013), 81-130.

[375] Miller, *Nature, Justice, and Rights in Aristotle's Politics* (1995), 4.

[376] Georg Jellinek, *Sistema dei Diritti Pubblici Subbiettivi* (Milano: Società Editrice Libreria, 1912), 96 [Italian translation of *System der subjektiven öffentlichen Rechts* (Freiburg: Mohr, 1882)].

In fact, the degrees of contextualisation may vary. States may model their rights catalogues as much as possible on regional or universal standards. On the other hand, they may develop their domestic rights standards "in a box",[377] such as the Bill of Rights in the US Constitution.

It is critical to distinguish among the variety of rights to understand how rights address human vulnerabilities.

Under the scope of the 1992 UNFCCC, the right to develop cannot trump the right to survival emissions. Moreover, it cannot trump the equally basic right to an adequate environment. Actually, both these rights claims inform the design of a fair and effective global climate regime. They provide a normative framework for distributing emission shares. Developing countries have been mostly producing "survival emissions" and not "luxury emissions." Therefore, they bear less responsibility for causing climate change. This means that within global climate there is also unjust inequality and rights assume different roles in disparate places.[378]

For example, Vanderheiden counterposes rights to a safe environment or stable climate against development interests, conceived in terms of rights, but adds to the mix a third right, based on a *rights to environment* approach, of individuals to a fair share of common resources. A combination of rights to environmental resources and against environmental harm entails that environmental rights be treated as plural and in balance with each other within the context of policy issues

[377] Eva Brems, "Smart human rights integration," in Eva Brems and Saïla Ouald-Chaib (eds.), *Fragmentation and integration in human rights law* (Cheltenham: Edward Elgar, 2018), 184.

[378] Steve Vanderheiden, "Climate Change, Environmental Rights, and Emission Shares," in Steve Vanderheiden (ed.), *Political Theory and Global Climate Change* (Cambridge, MA: MIT Press, 2008), 43-66.

such as climate change, and that they be further balanced against non-environmental rights like the example of those to development.[379]

Nevertheless, rights and especially environmental ones could be understood from different perspectives, which are discussed in the following paragraphs.

1.1. Human vs. fundamental vs. non-fundamental state-created rights

The first distinction that could be introduced is that between human, fundamental and non-fundamental state-created rights. At a previous moment, human rights could be those recognised by the international community as such. Fundamental rights would be those expressly proclaimed by constitutions as such, and non-fundamental state-created rights would be the remaining rights not considered as human or fundamental, both by international, regional (in the case of the E.U.), or national constitutional law.

As modernly defined, human rights are usually presented as those listed in the Universal Declaration of Human Rights (UDHR), proclaimed by the United Nations General Assembly in Paris on 10 December 1948 (General Assembly resolution 217 A) as a common standard of achievements for all peoples and all nations of the world. Consequently, they are accepted and recognised as universal human rights. However, human rights should not be limited to those provided by the UDHR.

[379] Vanderheiden, "Climate Change, Environmental Rights, and Emission Shares" (2008), 43-66.

Since Greek antiquity, until the times of Aquinas and Grotius[380], and more lately Rousseau, Locke, Hobbes, or Kant, rights of man (or human beings) have been always thoroughly studied and discussed by legal researchers.[381]

If we look at human rights through Nederman's lenses, while analysing medieval legal philosophy, we may find that, over the times,

> "[t]he idea of human rights requires a commitment to a belief in 'duties beyond borders', that is, the position that rights are to be defended without regard for sovereign power or national self-determination."[382]

In more contemporary times, Szabo established that

> "[t]he notion of human rights falls within the framework of constitutional law and international law, the purpose of which is to defend by institutionalized means the rights of human beings against abuses of power committed by the organs of the State and, at the same time, to promote the establishment of humane living conditions and the multi-dimensional development of the human personality."[383]

From Alexy's perspective, "[i]t is impossible to justify human rights without using concepts like that of autonomy and that of person"[384]. The mentioned author points out that human rights as such possess only moral validity and, according to him, a right is morally valid if it is justified by everyone who is able and willing to engage in rational argument. The validity of human rights is their

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[380] Grotius expressly recognised property as a fundamental and inalienable right of all men. See Hugo Grotius, *The Rights of War and Peace*, vol. 2 (Book II) [1625], ed. and introd. Richard Tuck, from ed. Jean Barbeyrac (Indianapolis: Liberty Fund, 2005), 420.

[381] Imre Szabo, "Historical Foundations of Human Rights and Subsequent Developments," in Karel Vasak (ed.), *The International Dimensions of Human Rights* (Paris: UNESCO, 1982), 11-16.

[382] Cary J. Nederman, "Rights," in John Marenbon (ed.), *The Oxford Handbook of Medieval Philosophy* (Oxford: Oxford University Press, 2012), 653.

[383] Szabo, "Historical Foundations of Human Rights and Subsequent Developments" (1982), 11.

[384] Robert Alexy, "Menschenrecht ohne Metaphysik," *Deutsche Zeitschrift für Philosophie*, No. 52 (2004), 24.

existence and "[t]he existence of human rights, therefore, consists in their justifiability and in nothing else".[385]

And, following the same arguments, Aarnio would also emphasise that

> "[w]ithout an autonomous person, there is no law, and no morals either. These two entities do not belong to the physical world as "brute facts". The notion of "dignity" was used by Immanuel Kant in a close connection with the problem of human being".[386]

It is also noteworthy to highlight that Aarnio and Peczenik consider that

> "[t]here is (…) [a] change going on in all Welfare States: the rise in human and basic rights. The consequence of this trend is the strengthening role of the (legal) principles. In a modern Constitutional State, human and basic rights are a necessary element of not only the rule of law ideology but also of the notion of democracy. We can speak about a democratic Rule of Law State in cases where human and basic rights are protected."[387]

On the other hand, fundamental rights usually are considered as those expressly protected by certain constitution in a certain state or, as it happens in the US, those determined by judicial review, through the examination of historical foundations of the rights and the assessment whether their protection is part of a longstanding tradition.[388]

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[385] Alexy, "Menschenrecht ohne Metaphysik" (2004), 15. See also Aulis Aarnio, *Essays on the Doctrinal Study of Law* (Dordrecht: Springer, 2011), 103.

[386] Aarnio, *Essays on the Doctrinal Study of Law* (2011), 27. See also Norbert Hoerster, "Moralbegründung Ohne Metaphysik," Wilhelm K. Essler (ed.), *Erkenntnis*, No. 19, 1-3 (Dordrecht: Kluwer, 1983), 225-238.

[387] Aulis Aarnio and Aleksander Peczenik, "Suum Cuique Tribuere. Some Reflections on Law, Freedom and Justice," *RatioJuris*, Vol. 8, Issue 2 (1995), 142.

[388] In the US legal tradition, it is also possible that individual states guarantee other rights as fundamental, if not diminishing those already recognised by the federal state. See Stewart J. Pollock, "State Constitutions as Separate Sources of Fundamental Rights," *Rutgers Law Review*, Vol. 35 (1983), 707-722.

Among all the different rights recognised to the persons within the legal order of a certain state, the fundamental rights (or the rights of the persons before the state and based on the constitutions) translate a fundamental relationship and benefit of the guarantees that are inherent to the specific force and validity of the constitutional norms.[389]

According to Miranda, fundamental rights necessary imply the following three conditions:

i) The existence of an immediate relationship between the people and the political power (there are no fundamental rights without the existence of a state or, at least, an integrated political community which must protect them);
ii) The recognition of a singular autonomy of the persons before political power, not being the society absorbed by that power (it does not happen within totalitarian regimes[390]); and
iii) The existence of a legal constitutional instrument, as the foundation or refoundation of the legal order or system and subject to a constitutional power (the constitution as a rationalising systematisation of the norms of power and community).[391]

On the other hand, for Gomes Canotilho, the subjective right protected by a fundamental rights norm is part implies a *trilateral relation* between its holder, the addressee and the object of the right. Then, a norm binds a subject in objective

[389] Jorge Miranda, *Direitos Fundamentais*, 2nd ed. (Coimbra: Almedina, 2017), 11; Robert Alexy, *Teoria de los Derechos Fundamentales* (Madrid: Centro de Estudios Constitucionales, 1993), 173. [Spanish translation of *Theorie der Grundrechte* (Frankfurt am Main: Suhrkamp, 1986)]; and Thomas Meindl, *La notion de droit fondamental dans les jurisprudences et doctrines constitucionnelles françaises et allemandes*, (Paris: LGDJ, 2003), 279.

[390] See Ulrich Scheuner, "Le people, l'État, le droit et la doctrine national-socialiste," *Revue du droit public et de la science politique en France et a l'etranger*, Vol. 44, n. 54 (1937), 38-57.

[391] For all, see Jorge Miranda, *Direitos Fundamentais* (2017), 12-13.

terms when it fundaments or justifies obligations which are not in a relation with any concrete holder.[392]

From the perspective of Bacelar Gouveia, fundamental rights are active legal positions of people who are integrated within a *State-Society* and which are exercised as a counterposition to the *State-Power*. These positions are positivised in the Constitution and imply three constitutive elements: (i) a *subjective element* – people integrated in the State-Society, the holders of those rights, which can be exercised against the State-Power; (ii) an *objective element* – the coverage of a number of advantages inherent to the objects and contents which are protected by each fundamental right; and (iii) a *formal element* – the provision of those advantageous positions at a constitutional level (the supreme standard of any legal order).[393]

Actually, a large number of fundamental rights are also widely considered human rights. They could have a natural law origin, as understood by the American and French Revolutions, or only a positive origin, as more generally accepted nowadays. Also, the EU law recognises a catalogue of fundamental rights, through the Charter of Fundamental Rights of the European Union (CFREU).[394] Even not being a constitution, this charter recognizes rights to the citizens of the EU and seems also to intend to go even further, once it uses more general terms such as "everyone" and not exclusively referring to European

[392] J.J. Gomes Canotilho, *Direito Constitucional e Teoria da Constituição*, 7th ed. (Coimbra: Almedina, 2003), 1254.

[393] Jorge Bacelar Gouveia, *Manual de Direito Constitucional: II – Direito Constitucional Português* (Coimbra: Almedina, 2019), 930.

[394] Under the Title IV (Solidarity), the Article 37 (Environmental protection) of the CFREU provides that "[a] high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development."

citizens (albeit this Charter envisioned to be in the origin of the European citizenship).

In fact, differences between the two concepts tend to reduce and harmonize with the trend of globalization of constitutional fundamental rights and, on an opposite sense, the transposition of human rights to constitutions. Even if some national laws directly receive human rights into their constitutional law, not being necessary to transpose those human rights to domestic constitutions.[395]

Finally, another classification of rights could be presented under this scope, which concerns the non-fundamental state-created rights. These can be provided by constitutions or simply by statute or case law (depending on the legal tradition – common law or civil law). They are not directly (and fundamentally) inherent to the human person or to a citizen of a certain state. They are instead attributed by law, very often with derivative or procedural characteristics, in order to implement human, fundamental, core, procedural rights (these last concepts will be mentioned later in our study) or even to implement deeply held policies and norms, as well as political and good governance functions.[396]

The distinction between these three types of rights is extremely important. One of the main reasons is connected to the mutability of the rights, *i.e.* whether the state can change or eliminate them. If in the case of human rights, it is impossible for the state to change them, due to their universality, constitutional fundamental can be changed through special procedures. And for state-created rights, there is

[395] This is the case of Portugal, in the Article 16 of the Constitution, on the scope and sense of fundamental rights, but also in the Article 8, on que reception of the norms and principles of general international law.

[396] See *Kentner v. City of Sanibel*, 750 F.3d 1274, United States Court of Appeals for the Eleventh Circuit, May 8, 2014, Decided, No. 13-13893 <https://casetext.com/case/kentner-v-city-of-sanibel> (accessed on 2020.01.10).

always the possibility of lawmakers to change, extend or reduce their application, or even to revoke them.

With regard to environmental rights, Aragão correctly explains, while analysing the Portuguese Constitution, that despite the relatively high level of detail of some constitutional provisions, "they only gain normative force and operability when they are elaborated at the infra-constitutional level."[397]

1.2. Positive vs. negative rights

In what regards the differences between positive, one generally accepted definition of both concepts is the one introduced by Fried, who considered that:

> "A positive right is a claim to something – a share of material goods, or some particular good like the attention of a lawyer or a doctor or perhaps the claim to a result like health or enlightenment – while a negative right is a right that something not be done to one, that some particular imposition be withheld. Positive rights are inevitably asserted to scarce goods, and consequently scarcity implies a limit to the claim. Negative rights, however, the rights not to be interfered with in forbidden ways, do not appear to have such natural, such inevitable limitation. […] It is logically possible to respect any number of negative rights without necessarily landing in an impossible and contradictory situation. […] Positive rights, by contrast, cannot as a logical matter be treated as categorical entities, because of the scarcity limitation."[398]

[397] Alexandra Aragão, "Environmental Standards in the Portuguese Constitution," in Stephen J. Turner, Dinah Shelton, Jona Razzaque, Owen McIntyre, and James R. May (eds.), *Environmental Rights: The Development of Standards* (Cambridge: Cambridge University Press, 2019), 247-264. On this issue, see also Stephen J. Turner, *A Substantive Environmental Right: An Examination of the Legal Obligations of Decision-makers Towards the Environment* (Alphen aan den Rijn: Kluwer Law International, 2009).

[398] Charles Fried, *Right and Wrong* (Cambridge, Mass.: Harvard University Press, 1978), 110.

Moreover, Kymlicka and Norman recognize those usually known as civil and political rights, traditionally protected by democratic constitutions are negative rights, "in the sense that they prohibit the state from doing certain things to *you*."[399]

As a consequence, negative rights could be labelled as liberty ones, opposing an idea that positive rights are more characterized as welfare claims or entitlements.

This distinction is relevant, especially to understand differences between the application of rights in the law of different legal traditions, such as common-law and civil law systems. The common-law tradition, where civil rights have a strong history (such as free speech, freedom of religion, and freedom of assembly), is more characterized as negative rights, whereas the civil law tradition largely stresses the importance of positive rights (economic, social, and cultural rights). These latter ones[400] place a duty on the state to take action and expend their resources to ensure that the right is fulfilled.[401]

1.3. Individual vs. collective rights

Another usual differentiation of rights is the one between individual and collective rights.

Our societies are accustomed to individuals claiming their rights. The individual right to a due process in criminal proceedings is an example of that.[402] On the

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[399] Will Kymlicka and Wayne J. Norman, *The Social Charter Debate: Should Social Justice be Constitutionalised?, Network Analyses: Analysis No 2, January 1992* (Ottawa: Network on the Constitution, January 1992), 2.

[400] Examples of positive rights may include government programmes to provide health care, education, or housing to the citizens of a given state or local community.

[401] Boyd, *The Environmental Rights Revolution* (2012), 23.

[402] On the connections of criminal law and the environment, see, in Portuguese, Frederico de Lacerda da Costa Pinto, "Sentido e limites da protecção penal do ambiente," *Revista portuguesa de ciência criminal*, A. 10, No.3 (Jul.-Set. 2000), 371-387.

other hand, the right of the individual to equality is different. Discrimination very often occurs because the individual is part of a group with certain characteristics, which are not unique to single individuals. These group characteristics, as found in provisions prohibiting discrimination, may include race, sex, age, political or religious belief, national origin, marital status, sexual orientation, class, language, and disability.[403] Individuals opposing discrimination for having any of these characteristics seek to be judged on individual criteria, and not for sharing such characteristics with other members of these groups. In this situation, equality is clearly an individual right.[404]

The notion of *collective rights* arose based on the reality that individual rights do not guarantee adequate protection, such as that for indigenous peoples and other minorities and oppressed or marginalised communities exhibiting more *collective* characteristics. These mentioned groups or communities face various threats to their livelihoods, environments, health or security. Their very survival and dignity may depend upon the recognition and protection of their collective rights.[405]

A large number of more recent rights, such as the ones to a healthy environment, peace, and development, are usually and generally described as collective rights. Consequently, very often legal decision-makers, such as legislatures and courts, have difficulty in accepting those rights. This happens because they are not seen

[403] See Ryan Holifield, "Defining environmental justice and environmental racism," *Urban Geography*, Vol. 22, Issue 1 (2001), 78-90.

[404] Douglas Sanders, "Collective Rights," *Human Rights Quarterly*, Vol. 13 (1991), 368-386.

[405] See United Nations Regional Information Centre for Western Europe, "Individual vs. collective rights" <https://www.unric.org/en/indigenous-people/27309-individual-vs-collective-rights> (accessed on 2019.07.30); Friends of the Earth International, "Collective rights" <https://www.foei.org/what-we-do/collective-rights> (accessed on 2020.01.05).

as specifically related to individuals. Accordingly, it is harder to make them prevail and even demonstrate that violations to them occur.[406]

Some national constitutions have foreseen the right to a healthy environment as a collective right. That is the case of Colombia, in its Article 79. And it is a curious fact that a large number of environmental cases brought to be decided by the Inter-American Court and the Inter-American Commission on Human Rights concerned communal rights of indigenous people.[407]

However, the right to a healthy environment is not always proclaimed solely as a collective right. In its Article 24, the African Charter on Human and Peoples' Rights, also known as the Banjul Charter (ACHPR), provides that "[a]ll peoples shall have the right to a general satisfactory environment favourable to their development." This demonstrates that the right to a healthy environment can be addressed to both individual subjects and collective communities, depending on the approach of each constitution, but also on the practical and concrete cases.

Another example of a collective right is the case of a possible right to a green future, proposed by Hiskes,[408] which is strictly connected to the issues embraced by intergenerational justice and specifically dedicated to the category of future generations.[409]

Regarding this distinction, Kymlicka rejects the term "collective rights" altogether and suggests the idea of "group-differentiated rights" instead, since collective rights should be understood as presumably exclusively granted to

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[406] Boyd, *The Environmental Rights Revolution* (2012), 25.

[407] See the *Community Mayagna (Sumo) Awas Tingni*, Ser. C, No. 79, 151 (Nicaragua) (2001) <http://www.corteidh.or.cr/docs/casos/articulos/seriec_79_ing.pdf> (accessed on 2020.01.10), or *Yanomami Indians*, Resolution No. 12/85, Case Nº 7615, BRAZIL, March 5, 1985 IACHR, <http://www.cidh.org/annualrep/84.85eng/Brazil7615.htm> (accessed on 2020.01.10).

[408] Hiskes, *The Human Right to a Green Future* (2009).

[409] See also Andre Santos Campos, "Intergenerational Justice Today," *Philosophy Compass*, Vol. 13, Issue 3 (March 2018), e12477.

"collectivities" as distinct from and conflicting with individual rights. Therefore, group differentiated rights could be exercised equally by individuals. [410]

1.4. Substantive vs. procedural rights

In addition to the previously presented distinctions, also important for the theory of rights, and moreover to that of environmental rights, is the dichotomy between substantive rights and procedural rights.

Examples of substantive environmental rights are those which entitle individuals to a certain level of environmental quality. On the other hand, environmental procedural rights are those which can ensure access to information, participation in decision making, and access to justice when a right (very often but not only substantive) is violated.

Procedural rights have been gaining more relevance in the last decades thanks to the adoption of the United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, was adopted on 25 June 1998 in the Danish city of Aarhus at the Fourth Ministerial Conference as part of the "Environment for Europe" process. This instrument entered into force on 30 October 2001 and became broadly known as Aarhus Convention.

Another example of this trend is the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, better known as "Escazú Agreement" because of the

[410] Will Kymlicka, *Multicultural Citizenship: A liberal theory of minority rights* (Oxford: Oxford University Press, 1996), 34, 45-56.

city where it was adopted, in Costa Rica, on 4 March 2018.[411] The agreement was open for signature at the UN Headquarters in New York on 27 September 2018.

Following the same fundamentals of the Aarhus Convention, the objectives of the Escazú Agreement are, according to Article 1, the following:

> "to guarantee the full and effective implementation in Latin America and the Caribbean of the rights of access to environmental information, public participation in the environmental decision-making process and access to justice in environmental matters, and the creation and strengthening of capacities and cooperation, contributing to the protection of the right of every person of present and future generations[412] to live in a healthy environment and to sustainable development."

Therefore, both substantive and procedural rights play a highly relevant role in the protection of the environment and are more and more dependent on the execution of each other. It would be impossible nowadays to analyse the protection of any substantive environmental right without assuring that are foreseen procedural rights in order to apply them.[413] As a consequence, they are usually instrumental, as they give the structural framework for the realization of

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[411] The document can be accessed on the webpage of the Economic Commission for Latin America and the Caribbean (ECLAC or CEPAL, from Spanish and Portuguese) <https://repositorio.cepal.org/bitstream/handle/11362/43583/1/S1800428_en.pdf> (accessed on 2020.01.05).

[412] On the relation between rights (especially fundamental rights) and future generations, see also Jorge Pereira da Silva, *Direitos Fundamentais: Teoria Geral* (Lisboa: Universidade Católica, 2018), 127-170.

[413] See Joshua C. Gellers, and Christopher Jeffords, "Procedural Environmental Rights and Environmental Justice: Assessing the Impact of Environmental Constitutionalism," *Economic Rights Working Papers*, No. 25, University of Connecticut, Human Rights Institute (2015) <https://ideas.repec.org/p/uct/ecriwp/hri25.html> (accessed on 2020.01.05); Birgit Peters, "Unpacking the Diversity of Procedural Environmental Rights: The European Convention on Human Rights and the Aarhus Convention," *Journal of Environmental Law*, Vol. 30, Issue 1 (2018), 1-27.

substantive rights.[414] Procedural rights are practical and enforceable, enabling citizens and groups to contribute actively to the protection of their substantive rights.[415]

However, rights such as those to transparency or information, the right to participation in decision making, or the access to justice, may exist without an express and direct dependence from a specific substantive right. And in respect to environmental rights, this independence from substantive rights is becoming more and more a reality. In effect, the already mentioned Aarhus Convention is a clear demonstration of that recent trend.

It is, in fact, a form of creating or increasing the ties between law- or decision-making and citizens (the people, those who are ruled and governed), given that, using the words of Habermas, "the public sphere can best be described as a network for communicating information and points of view (i.e., opinions expressing affirmative or negative attitudes)."[416] Moreover, even Savigny, in 1814, considered the "common legal conviction of the people" (*Volksgeist* or spirit of the people) as an original source of law, and not statutory law, based on the fundamentals that "the law (…) grows with the people, it is developed with them and, in the end, dies through the same way the people lose their identity."[417]

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[414] Philippe Cullet, "Definition of an Environmental Right in a Human Rights Context," *Netherlands Quarterly of Human Rights*, Vol. 13, No. 1 (1995), 37.

[415] Boyd, *The Environmental Rights Revolution* (2012), 26.

[416] Jürgen Habermas, *Between Facts and Norms: Contributions to a Discourse Theory of Law and Democracy*, trans. William Rehg (Cambridge, MA: The MIT Press, 1996), 360.

[417] Friedrich Carl von Savigny, *Vom Beruf unserer Zeit für Gesetzgebung und Rechtswissenschaft* (Heidelberg: Mohr und Zimmer, 1814), 8-11 <http://www.deutschestextarchiv.de/book/view/savigny_gesetzgebung_1814?p=7> (accessed on 2020.01.07).

2. Framings of environmental rights

The formation of an idea of enforceable environmental rights within the international, regional, or domestic frameworks has been helping to ensure standards of environmental protection, at different levels, and allowing for more concrete or specific control in local development. Individual environmental rights help to ensure public involvement in protection of the environment. The creation of these rights goes beyond public participation in decision-making and intends to allow public enforcement of environmental rules.

Examples of enforceable environmental rights, at both a national and European level, are very limited, especially if they are collective ones. It is not easy to create and provide environmental rights that are sufficiently flexible to respond to the continuous changing knowledge about the environment, and simultaneously to changing environmental pressures, as well as sufficiently certain and predictable to comply with the rule of law, and to make them absolutely effective and useful in practice. Nevertheless, the call for developing such effective rights is pressing this and in fact is the next area of innovation in environmental regulation.[418]

Such rights may, for example, arise as adjuncts to or part of rights that are already established. However, with regard to a human rights and environmental rights discourse, Shelton argues that:

> "the essential concern of human rights law is to protect existing individuals within a given society, while the purpose of environmental law is to sustain life globally by balancing the needs and capacities of the present with those of the future."[419]

Environmental rights may emerge as constitutional rights. Additionally, they can occur as human rights that do not appear within national constitutions. Both

[418] Bell et al. *Environmental Law* (2017), 76-89.

[419] Dinah Shelton, "Human Rights, Environmental Rights, and the Right to Environment," *Stanford Journal of International Law*, Vol. 28 (1991), 103-111.

constitutional and human rights can, thus, act as *limitations* on environmental protection. They may exist as *stand-alone rights*, not framed as human rights or constitutional protections. These rights can found in individual tools for protecting the environment, and also in private law claims. Those laws relating to nuisance, for example, to a degree allow for rights protecting the environment. Even though, these rights are not so general in their scope and usually regard very specific environmental problems.[420]

2.1. Human, fundamental or non-fundamental environmental rights

Many international instruments and organisations treat environmental rights as human rights. These sources include documents such as the UDHR,[421] the European Convention on Human Rights (ECHR),[422] or the African Charter on Human and Peoples' Rights (ACHPR).[423]

The principles and theories behind international recognition of environmental rights as human are, first of all, premised on International Law and influenced by the theories of Natural Law.

As Bosselmann has demonstrated, while theorising the recognition of "ecological human rights," "[v]arious human rights tribunals have noted that failure of public authorities to protect citizens from environmental harm can raise issues of

[420] Bell et al. *Environmental Law* (2017), 76-89.

[421] See all the information on the UDHR <https://www.un.org/en/universal-declaration-human-rights/> (accessed on 2020.01.05).

[422] The full text of the ECHR is available on its webpage <https://www.echr.coe.int/Documents/Convention_ENG.pdf> (accessed on 2020.01.05).

[423] The ACHPR is also known as the Banjul Charter and its text is made available by the African Commission on Human and Peoples' Rights <https://www.achpr.org/public/Document/file/English/banjul_charter.pdf> (accessed on 2020.01.07).

human rights protection," since "[w]henever environmental harm occurs the enjoyment of human rights is potentially at risk."[424] Also Sands stresses that

> "[w]hile economic and social rights have traditionally been less well developed in practice, recent judicial decisions indicate that international courts and tribunals are increasingly willing to find violations of substantive environmental rights."[425]

And environmental rights could be, therefore, classified as human rights, because they are direct or indirectly provided as so, once demonstrated above, in a large number of international instruments (mainly from UN or other organizations), what reveals their universality, but also because they are becoming to be recognised as fundamental rights by an increasing quantity of constitutions around the world.

The International Court of Justice's Judge Weeramantry concluded the following:

> "The protection of the environment is (…) a vital part of contemporary human rights doctrine, for it is a sine qua non for numerous human rights such as the right to health and the right to life itself. It is scarcely necessary to elaborate on this, as damage to the environment can impair and undermine all the human rights spoken of in the Universal Declaration and other human rights instruments."[426]

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[424] Bosselmann, *The Principle of Sustainability* (2016), 114-118.

[425] Philippe Sands and Jacqueline Peel, *Principles of International Environmental Law*, 3rd ed. (Cambridge: Cambridge University Press, 2012), 780. On social rights see, more specifically in Portuguese, Jorge Reis Novais, *Direitos Sociais: Teoria Jurídica dos Direitos Sociais enquanto Direitos Fundamentais* (Lisboa: AAFDL, 2017).

[426] *Gabčíkovo-Nagymaros Project (Hungary v Slovakia)* [1997] ICJ Rep. 492, ICJ GL No 92, Judgment, Merits, 25 September 1997 <https://www.icj-cij.org/en/case/92/judgments> (accessed on 2020.01.10), 206.

Some years before, Cullet had already written on the "right to environment", recognising that its contents "can be looked at through the principle of solidarity that pervades the link between human rights and environmental protection."[427]

However, more than one and only right to environment, other human rights related to the protection of natural resources and the dignity and well-being of humans as part of the environment must be ensured. We choose, with a large part of the literature, to label them as environmental rights and some examples of those will be identified and explained further.

According to Kiss and Shelton,

> "human rights exist to promote and protect human well-being, to allow the full development of each person and the maximization of the person's goals and interests, individually and in community with others. This cannot occur without state protection of safe environmental milieu, i.e., air, water, and soil. Pollution not only destroys the environment, but today is considered to infringe human rights law as well."[428]

Actually, not only issues regarding pollution must be tackled, but also a myriad of problems related to uncertainty and climate change, which more and more affect the planet and human beings. For that, Kiss and Shelton's words are still contemporary and need to be stressed and implemented in practice, both locally and internationally.

At a national perspective, regarding fundamental rights, the essential legal instruments which set them are usually national (or state) constitutions. However, also some other supranational instruments recognise the legal

[427] Cullet, "Definition of an Environmental Right in a Human Rights Context" (1995), 31.
[428] Alexandre Kiss, and Dinah Shelton, *Guide to International Environmental Law* (Leiden: Martinus Nijhoff, 2007), 241.

existence and validity of fundamental rights, such as the EU Charter of Fundamental Rights.

Therefore, it is possible to find the protection of similar rights, especially in the constitutions of both European (Portugal: Article 66; and Spain: Article 45) and South American states (Brazil: Article 225; Ecuador: Article 14, 15 and 66[429]; El Salvador: Article 34; or Peru: Article 2), as fundamental rights constitutionally provided, or even in the CFREU (Article 37).[430]

However, more and more, core environmental rights do not need to be provided by in constitutions or in other statutory legislation to be valid and in force at a universal level.

[429] The Constitution of Ecuador recognises environmental rights to human beings, such as *sumak kawsay* (Kichwa concept for good way of living, which was assimilated to the Aymara concept of *suma qamaña*), but even the to "the nature (or *Pachamama*)," in Articles 71 to 74, having been the first state in the world (in 2008) to expressly provide constitutional recognition of rights to Nature, followed by Bolivia (in 2009). The Article 71 of the Ecuadorian constitution provides that "Nature or Pachamama, where life is reproduced and exists, has the right to exist, persist, maintain and regenerate its vital cycles, structure, functions and its processes in evolution. Every person, people, community or nationality, will be able to demand the recognitions of rights for Nature before the public organisms. The application and interpretation of these rights will follow the related principles established in the Constitution." On the concepts of *sumak kawsay* and *suma qamaña*, see Antonio Luis Hidalgo-Capitán, Ana Patricia Cubillo-Guevara, and Francisco Masabalín-Caisaguano, "The Ecuadorian indigenist school of good living (sumak kawsay)," *Ethnicities* (March 2019), 1-26 <https://journals.sagepub.com/doi/pdf/10.1177/1468796819832977?casa_token=U7PZizqL_f8AAAAA:RvTMQ9LmehNEYbDZsHkS4iFl1E85YKwPY6TUYjT6W9mRhogJqIb3iOcPIiSX1IrsJ03FEWiAKGE> (accessed on 2020.01.05).

[430] In these cases, it should be mentioned that the recognition of these rights as fundamental also demonstrates national (also by the EU) acceptance of those rights as universal, and therefore human rights.

2.2. Positive and negative environmental rights

As claims to something – a share of material goods, or some particular good like the attention of a lawyer or a doctor or perhaps the claim to a result like health or enlightenment –, positive rights are usually provided by civil law constitutions, which very often proclaim economic, social and cultural rights, duty on the state to take action, and other welfare obligations of protection by the state.[431]

Negative rights, as rights that something not to be done to one, that some particular imposition be withheld, are those commonly provided in common-law constitutions and in the first parts of the catalogues of rights in civil law constitutions. Typically, they intend to prohibit the state from doing certain things to you (e.g. civil and political rights: free speech, religion).

2.3. Individual and collective environmental rights

Individual rights, as those guaranteed to individual citizens (e.g. freedom of religion, right to vote), are also usually provided in constitutions, but also in human rights catalogues. While collective rights, as group rights (e.g. rights to a healthy environment, peace, development), are only proclaimed by some recent constitutions and international law instruments.

According to Boyd, "the right to a healthy environment appears to transcend the conventional binary classification of human rights, as it has both individual and collective aspects."[432]

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[431] See Pereira da Silva, *Deveres do estado de proteção de direitos fundamentais* (2015).

[432] Boyd, *Environmental Rights Revolution* (2012), 25. A similar example is the right to health protection.

2.4. Substantive and procedural environmental rights

Substantive rights, as those that entitle individuals to a certain level of protection (e.g. clean air, safe water, and a level of environmental quality that does not jeopardise peoples' health or well-being), are usually provided by acts specifically dedicated or intended to set out a framework of protection. On the other hand, procedural rights, which intend to implement or apply substantive rights (e.g. access to information, participation in decision making, and access to justice when one's right is violated), are typically provided by administrative statutes and decisions.[433]

2.5. Environmental rights as those of communities living in and depending on the environment

Assuming the mentioned arguments, it must be said that the protection of environmental rights is directed to those human beings and communities who live in certain territories and who also depend on the environment to do so. This means that when a public authority or agency which is responsible for the governance or management of a given territory – at national, regional or local level – exercises its mission and action, its activity must be developed while respecting and protecting the environmental rights of the communities living in that territory.

Maybe the most paradigmatic examples could be the cases of indigenous communities whose environmental rights should be respected.[434] However, cities are other examples which are gaining more and more relevance due to their

[433] Boyd, *Environmental Rights Revolution* (2012), 25-27.

[434] On this topic, see Deborah McGregor, "Living well with the Earth: Indigenous rights and the environment," Corinne Lennox, and Damien Short (eds.), *Handbook of Indigenous Peoples' Rights* (Abingdon: Routledge, 2016), 167-180.

increasing both in dimension and in population all over the planet. The protection of environmental rights in the city and its relevance to achieve resilience is, in fact, one of the most relevant topics of our times and that is exactly one of the reasons of existence of this dissertation.

This highly strength symbiosis between communities and the environments where they live is the reason why, in the last decades, a relevant trend in literature sustaining environmental justice[435] (or even climate justice[436]) and resilience justice approaches has been growing.[437] And authors, such as Caniglia, try to find new approaches about how societal resilience can be strengthened in order to maintain harmonious relations between humans and the earth.

At this point, the author suggests lessons as the following: (i) "learning to accept change and actively building an understanding of and response to inevitable change"; (ii) "utilizing planning, innovation, and collective action to [ensure that basic needs are met]"; (iii) "developing and engaging diverse resources"; and (iv) "becoming active agents in bringing about resilience."[438] Based on their observations of movement practices, Patterson and Smith suggest to add the previous list also "cultivating an *environmental justice constituency* that supports ecologically grounded rights-based projects." [439]

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[435] Regarding the concept of environmental justice and its relation to people, culture and communities, see David Schlosberg, *Defining Environmental Justice. Theories, Movements and Nature* (Oxford: Oxford University Press, 2007), 58-64.

[436] See Tracey Skillington, *Climate Justice and Human Rights* (New York: Palgrave Macmillan, 2017), 41-89.

[437] Adriana Allen et al, *Environmental Justice and Urban Resilience in the Global South* (2017).

[438] Beth Schaefer Caniglia et al, "Enhancing Environmental Justice research praxis: the inclusion of human security, resilience and vulnerabilities literature," *International Journal of Innovation and Sustainable Development*, Vol. 8, No. 4 (2014), 409-426.

[439] Jacqueline Patterson, and Jackie Smith, "Environmental Justice Initiatives for Community Resilience," Caniglia, Vallée and Frank (eds.), *Resilience, Environmental Justice and the City* (2017), 219.

Here again, the importance of rights must be emphasised in order to support the various approaches that can promote cooperation among communities and enhance the above-mentioned symbiosis between the communities and the environments where they live and depend on, to be more resilient and thrive.

2.6. Urban environmental rights: deconstructing the right to the city

When analysing the reality of environmental rights and their connection to urban resilience, there is no possibility of not recalling the suggestion of a right to the city, by the already mentioned French philosopher and sociologist Lefebvre[440]– widely famous for his critique of everyday life, right to the city, production of social space –, which was later developed by the British anthropologist and geographer Harvey.[441]

The theory of the "right to the city" – from the French expression *droit à la ville* –, proposed by these authors, presents more than the availability of public goods and resources for every citizen. In fact, it comprises an idea of a

> "harmonious equality in the accessibility and open availability of affordable housing, education, public space, transportation, employment, and most importantly the Democratic process".[442]

Therefore, this mentioned right to the city is represented as an equitable enjoyment of the city's territory and services by all its inhabitants while

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[440] Lefebvre, *Le Droit à la Ville* (1968).

[441] See Harvey, "The Right to the City" (2008); and David Harvey, *Rebel cities: from the right to the city to the urban revolution* (London-Brooklyn, NY: Verso, 2012).

[442] Ian Nunley, "Le droit a la ville: Addressing Spatial Injustice and Hostile Geographies through the Application of Lefebvrian Philosophy in Contextually Capitalist Urban Planning Models," *Urban and Environmental Policy Senior Comprehensive Thesis* (Spring 2010) <https://www.oxy.edu/sites/default/files/assets/UEP/Comps/2010/Nunley_Le%20droit%20a%20la%20ville.pdf> (accessed on 2020.01.05).

respecting the need of sustainability and social justice so that the primary object of achieving an adequate standard of living for all is attained.[443] It was born as an answer to the planning and construction of what has been known as the "high-modernist city".[444] In fact, large cities such as Brasília and Chandigarh were planned and built in accordance to the principles of the Swiss-born French essayist, painter, architect, and planner, who used the professional name Le Corbusier.[445] And these experiences represented the subjugation of human life to the rule by the plan, geometry, and standardization, which were no more than utopian projects founded on an effective negation of the traditional country, its society and its culture.[446] Jacobs – an American-Canadian activist, famous for her urban studies – would designate this phenomenon of an extreme effort by the state or the public administration to manage the society with a view toward perfecting it as social and urban "taxidermy"[447].

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[443] Lefebvre states that "the right to the city manifests itself as a superior form of rights: right to freedom, to individualization in socialization, to habit and to inhabit. The right to the oeuvre, to participation and appropriation (clearly distinct from the right to property), are implied in the right to the city." See Lefebvre, *Writings on cities* (1996), 174.

[444] David Harvey locates the maximum exponent of "high-modernism" type of modernism in the post-World War II period, although his concern is particularly with capitalism and the organization of production. He defines high-modernism as "(…) the belief 'in linear progress, absolute truths, and a rational planning of ideal social orders' under standardized conditions of knowledge and production was particularly strong. The modernism that resulted was, as a result, 'positivistic, technocratic, and rationalistic' at the same time as it was imposed as the work of an elite avant-garde of planners, artists, architects, critics, and other guardians of high taste. The 'modernization' of European economies proceeded apace, while the whole thrust of international politics and trade was justified as bringing a benevolent and progressive 'modernization process' to a backward Third World." See David Harvey, *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change* (Cambridge, MA; Oxford: Blackwell, 1989), 35.

[445] Born Charles-Édouard Jeanneret-Gris, he was a visionary planner who had buildings constructed throughout Europe, Asia, and the Americas.

[446] Brazilian president Juscelino Kubitschek (from 1956 to 1961) would have asked once "What else will Brasília be (…) if not the dawn of a new day for Brazil?," quoted in Lawrence J. Vale, *Architecture, Power, and National Identity* (New Haven: Yale University Press, 1992), 125.

[447] The author argued that "a city cannot be a work of art. (…) In relation to the inclusiveness and literally endless intricacy of life, art is arbitrary, symbolic, and abstracted. That is its value and

As a matter of fact, this movement of planning a high-modernist city ended to raise more distress and inequalities, reducing spatial justice.[448] As Holston would emphasise,

> "They use the term *brasilite* [as for Brasíl(ia)-itis] to refer to their feelings about daily life without the pleasures – the distractions, conversations, flirtations, and little rituals – of outdoor life in other Brazilian cities."[449]

Other significant consequence of that experience was the growth of unexpected realities, such as the "unplanned Brasília", which was composed by the workers who came from all over the country to build the city and fixed in slums all around the previously planned city. Although they were expected to leave their concluded work to civil servants and public administrators, they did not correspond to the prospects of the planners. And even a large quantity of the population considered as rich created unforeseen settlements of individual houses and private condominiums, replicating other realities existent in the rest of the country, which were not planned according to high-modernist patterns.[450]

Consequently, it assumes particularly relevance to stress that when dealing with the right to the city, philosophers, lawyers and politicians face the challenge of granting an aspiring human right. In any case, the certainty about its qualification as a human right is far from being widely accepted.

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the source of its own kind of order and coherence. (…) the results of such profound confusion between art and life are neither life nor art. They are taxidermy. In its place, taxidermy can be useful and decent craft. However, it goes too far when the specimens put on display are exhibitions of dead, stuffed cities." See Jane Jacobs, *The Death and Life of Great American Cities* (New York: Vintage Books, 1961), 372-373.

[448] On the subject of spatial justice, the reading of texts released by the forum *Justice Spatiale/Spatiale Justice* is suggested, on JSSJ website <http://www.jssj.org/> (accessed on 2020.01.05).

[449] James Holston, *The Modernist City: An Anthropological Critique of Brasília* (Chicago: University of Chicago Press, 1989), 24-26.

[450] About the phenomenon of the «unplanned Brasília», see James C. Scott, *Seeing Like a State* (1998), 127-130.

Trying to persuade his future followers on the defence of a collective right to the city, Lefebvre argued that

> "the *right to the city* is like a cry and a demand. (...) [it] cannot be conceived of as a simple visiting right or as a return to traditional cities. It can only be formulated as a transformed and renewed *right to urban life*."[451]

And the author would conclude that

> "one only has to open one's eyes to understand the daily life of the one who runs from his dwelling to the station, near or far away, to the packed underground train, the office or the factory, to return the same way in the evening and come home to recuperate enough to start again the next day. The picture of this generalized misery would not go without a picture of 'satisfactions' which hides it and becomes the means to elude it and break free from it."[452]

It would, in fact, consists of an empowerment of the inhabitant whom he calls *citadin*, explaining that

> "The right to the city, complemented by the right to difference and the right to information, should modify, concretize and make more practical the rights of the citizen as an urban dweller (*citadin*) and user of multiple services. It would affirm, on the one hand, the right of users to make known their ideas on the space and time of their activities in the urban area; it would also cover the right to the use of the centre, a privileged place, instead of being dispersed and stuck into ghettos (for workers, immigrants, the 'marginal' and even for the 'privileged')."[453]

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[451] Lefebvre, *Writings on Cities* (1996), 158. (italics from the author).

[452] Lefebvre, *Writings on Cities* (1996), 159.

[453] Henri Lefebvre, "Les illusions de la modernité," *Maniére de voir*, Vol. 13, Le Monde Diplomatique (1991), 14-17.

As Mark Purcell would stress later, the idea of right to the city proposed by its founder intended to be

> "a call for a radical restructuring of social, political, and economic relations, both in the city and beyond. Key to this radical nature is that the right to the city reframes the arena of decision making in cities: it reorients decision-making away from the state and toward the production of urban space. Instead of democratic deliberation being limited to just state decisions, Lefebvre imagines it to apply to all decisions that contribute to the production of urban space."[454]

Therefore, in addition to Lefebvre's words, his follower Harvey presented the right to the city as a collective right, once it is

> "far more than the individual liberty to access urban resources: it is a right to change ourselves by changing the city. It is (…) a common rather than an individual right since this transformation inevitably depends upon the exercise of a collective power to reshape the processes of urbanization."

He would then conclude that "the freedom to make and remake our cities and ourselves is (…) one of the most precious yet most neglected of our human rights."[455]

Lefebvre intends to demonstrate that "only the working class can become the agent, the social carrier or support of this realization."[456] However, the large difficulty of this concept to be accepted as a collective human right is the integration of the urban "inhabitant" in the category of "working class", being the right to the city achieved by that eventual "social force" that would perform a "radical metamorphosis". Today, this perspective could be considered as out-of-date, once it is clear for all that not only working-class citizens are an active

[454] Purcell, "Excavating Lefebvre" (2002), 99-108.

[455] Harvey, "The Right to the City" (2008), 23.

[456] See Lefebvre, *Writings on cities* (1996), 156-158.

part of the city (probably even the concept of "working class" has been changing and redefining throughout times with the emergence of new rights and the recent phenomenon of the so-called "millennials"). The city must be built, changed and lived by all its inhabitants – no matter if they are poor, rich or from the middle-class.

In addition to that argument, it should be also stressed that the right to the city as suggested by its authors – though being an idea that may play an extremely relevant role in fostering equality, fairness and social development within cities – must be only accepted as an aggregate of rights and articulation of a larger assortment of other human rights (most of them environmental ones) that could – and should necessarily – be enjoyed by all citizens in every urban areas around the world where local and national governments are willing to grant the effective well-being for the people and their connection and balance with the urban environment.

In fact, and from a rigorous legal perspective, all these intentions might be proposed as remedies, procedures, policies, but not through arguing for or proclaiming a right.

3. The content of environmental rights

3.1. General approaches

From the recognition of environmental rights as universal human rights or simply constitutionally provided as fundamental rights in certain states (or even as non-fundamental state-created rights), the group of rights that can be labelled as *environmental rights* may assume different contents, though always being connected to human beings (who are the subjects of those rights) and their relationship with the environment around them.

In fact, as previously mentioned, there are examples of other subjects of rights, depending on the most different jurisdictions, such as the nature as itself (or *Pachamama*, in Ecuador) or animals, though these "rights" will not be analysed here.

3.2. International recognition: examples

As previously discussed, one of the possible categories or classifications which can be entitled to rights is that of human rights. And the first international text to recognise the principle that an acceptable environment is constitute a precondition for the enjoyment of certain human rights was the Declaration of the United Nations Conference on the Human Environment, approved in Stockholm in 1972, which proclaimed in its Principle 1 that

> "Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations (…)."[457]

Following the same roots, the World Commission on Environment and Development (WCED) would recognise, some years later, that "[a]ll human beings have the fundamental right to an environment adequate for their health and well-being."[458]

Twenty years after Stockholm, a new declaration emerged from the United Nations Conference on Environment and Development, held in Rio de Janeiro,

[457] See the Declaration of the UN Conference on Human Environment, Stockholm 1972.
[458] WCED, *Our Common Future: Report of the World Commission on Environment and Development* (Oxford: Oxford University Press, 1987), 348.

which would be known as the "Earth Summit" (1992) and where it was established that:

> "[h]uman beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature" (Principle 1 of the Rio Declaration on Environment and Development).[459]

Another interesting example concerning environmental rights and their claim to be recognised as human rights were the Draft Principles on Human Rights and the Environment produced by the UN Sub-Commission on Prevention of Discrimination and Protection of Minorities,[460] which were lately reduced and consolidated in a not so exhaustive way (though still long), in 16 Framework Principles, by the UN Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, John H. Knox. The principles are listed in the following Table 5.

[459] The Declaration of Rio de Janeiro is available on the UN website <https://sustainabledevelopment.un.org/content/documents/1709riodeclarationeng.pdf> (accessed on 2020.01.05). In this case, it is relevant to clarify that the text of the Declaration as forwarded was adopted at Rio without change, although the United States (and others) offered interpretative statements thereby recording their "reservations" to, or views on, some of the Declaration's principles, such as the right to development in an environmental context, precautionary action, common but differentiated responsibilities, or the interface of trade and environment. See more in the United Nations' Audiovisual Library of International Law, Introductory Note by Günther Handl, <https://legal.un.org/avl/ha/dunche/dunche.html> (accessed on 2020.02.09).

[460] Adopted at the 36th meeting, 26 Aug. 1994. See *Report of the Sub-Commission on Prevention of Discrimination and Protection of Minorities on its 46th session, Geneva, 1-26 August 1994*, E/CN.4/1995/2-E/CN.4/Sub.2/1994/56 (28 Oct. 1994), 71-72 <https://digitallibrary.un.org/record/161629> (accessed on 2020.01.06).

Table 5: Framework Principles on Human Rights and the Environment (2018)[461]

Framework principle 1	States should ensure a safe, clean, healthy and sustainable environment in order to respect, protect and fulfil human rights.
Framework principle 2	States should respect, protect and fulfil human rights in order to ensure a safe, clean, healthy and sustainable environment. (…)
Framework principle 3	States should prohibit discrimination and ensure equal and effective protection against discrimination in relation to the enjoyment of a safe, clean, healthy and sustainable environment. (…)
Framework principle 4	States should provide a safe and enabling environment in which individuals, groups and organs of society that work on human rights or environmental issues can operate free from threats, harassment, intimidation and violence. (…)
Framework principle 5	States should respect and protect the rights to freedom of expression, association and peaceful assembly in relation to environmental matters. (…)
Framework principle 6	States should provide for education and public awareness on environmental matters. (…)
Framework principle 7	States should provide public access to environmental information by collecting and disseminating information and by providing affordable, effective and timely access to information to any person upon request. (…)
Framework principle 8	To avoid undertaking or authorizing actions with environmental impacts that interfere with the full enjoyment of human rights, States should require the prior assessment of the possible environmental impacts of proposed projects and policies, including their potential effects on the enjoyment of human rights. (…)
Framework principle 9	States should provide for and facilitate public participation in decision-making related to the environment, and take the views of the public into account in the decision-making process. (…)
Framework principle 10	States should provide for access to effective remedies for violations of human rights and domestic laws relating to the environment. (…)
Framework principle 11	States should establish and maintain substantive environmental standards that are non-discriminatory, non-retrogressive and otherwise respect, protect and fulfil human rights. (…)
Framework principle 12	States should ensure the effective enforcement of their environmental standards against public and private actors. (…)
Framework principle 13	States should cooperate with each other to establish, maintain and enforce effective international legal frameworks in order to prevent, reduce and

[461] Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, UN General Assembly, A/HRC/37/59, 24 January 2018, Human Rights Council, Thirty-seventh session 26 February–23 March 2018 <https://www.ohchr.org/EN/Issues/Environment/SREnvironment/Pages/FrameworkPrinciplesReport.aspx> (accessed on 2020.01.05).

	remedy transboundary and global environmental harm that interferes with the full enjoyment of human rights. (…)
Framework principle 14	States should take additional measures to protect the rights of those who are most vulnerable to, or at particular risk from, environmental harm, taking into account their needs, risks and capacities. (…)
Framework principle 15	States should ensure that they comply with their obligations to indigenous peoples and members of traditional communities, including by: (a) Recognizing and protecting their rights to the lands, territories and resources that they have traditionally owned, occupied or used; (b) Consulting with them and obtaining their free, prior and informed consent before relocating them or taking or approving any other measures that may affect their lands, territories or resources; (c) Respecting and protecting their traditional knowledge and practices in relation to the conservation and sustainable use of their lands, territories and resources; (d) Ensuring that they fairly and equitably share the benefits from activities relating to their lands, territories or resources. (…)
Framework principle 16	States should respect, protect and fulfil human rights in the actions they take to address environmental challenges and pursue sustainable development.

However, even having reduced the previous 27 draft principles to 16, some of the mentioned rights still demonstrate to be what Raz has once described as "derivative" rights, which one only is entitled to if subject of "core" rights. One classic example given by the author is the case of someone who owns a whole street because he or she bought all houses located in that same street. [462] This means that, now concerning environmental rights, a large quantity of rights is not required. The simple recognition of the said core rights is enough for those rights to be accepted by the international community and, especially, international law as human rights.

In a more recent report to the Fortieth Session of the Human Rights Council of march this year, the new Special Rapporteur on human rights and the environment, David Boyd, highlighted global normative acceptance of states regarding their obligations to provide a healthy environment. In the report is stated that, "in total, at least 155 States are legally obligated, through treaties,

[462] Joseph Raz, *The Morality of Freedom* (1986), 168-170.

constitutions, and legislation, to respect, protect and fulfil the right to a healthy environment."[463]

Other illustrations of legal instruments providing environmental rights could be presented, such as the 1988 Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights ("Protocol of San Salvador")[464] provides in its Article 11 that "[e]veryone shall have the right to live in a healthy environment and have access to basic public services."[465] Or even, as noted by Miller, the Council of Europe's Convention for the Protection of Human Rights and Fundamental Freedoms, which though not providing directly and expressly the protection of environmental rights, its rights "have acquired, or can be interpreted to have, an environmental role."[466]

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[463] See the Report of the Special Rapporteur "Issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment," Human Rights Council <https://undocs.org/A/HRC/40/55> (accessed on 2020.01.05).

[464] The mentioned protocol can be accessed on the website of the Organization of American States (OAS) <http://www.oas.org/en/iachr/mandate/Basics/protocol-San-Salvador-economic-social-cultural-rights.pdf> (accessed on 2020.01.05).

[465] On this topic, see Ian Brownlie, *Basic Documents on Human Rights*, 3rd ed, (Oxford: Oxford University Press, 1992), 521.

[466] Miller, *Environmental Rights: Critical Perspectives* (1998), 2. The author gives the example of the case *R. v. Secretary of State for the Environment, ex parte Friends of the Earth and Another* (Court of Appeal, 25 May 1995), where the court concluded to identify "no requirement of Community law which requires the Secretary of State to ignore, or override, the provisions of domestic law, in particular where those provisions protect the rights of third parties which may include rights protected by the European Convention on the Protection of Human Rights and Fundamental Freedoms". See also *Onerylidz v. Turkey Judgement* in the European Court of Human Rights, where the applicants invoked the right to life (Article 2 of the Convention), the right to private and family life (Article 8) and the right to peaceful enjoyment of possessions (Article 1 of Protocol No. 1) as being violated through a methane explosion at a nearby municipal waste dump. The Court largely agreed and concluded that Article 2 imposes "a positive obligation on States to take appropriate steps to safeguard the lives of those within their jurisdiction" and the referred imposition "entails above all a primary duty on the State to put in place a legislative and administrative framework designed to provide effective deterrence against threats to the right to life." See *Onerylidz v. Turkey* [2004] ECHR 657 (30 November 2004), para. 71, 89-90.

3.2.1. Environmental rights in the European Court of Human Rights

The European Convention of Human Rights (ECHR) is primarily engaged in the context of environmental claims through its Articles 2 (right to life) and 8 (right to respect for private and family life).[467] Moreover, the right to enjoyment of possessions, under the protection of property provided by Article 1 of the Protocol to the Convention for the Protection of Human Rights and Fundamental Freedoms, plays an important role in the context of environmental issues, even if in a different manner. Articles 2 and 8 of the ECHR have been used mainly as an important instrument in the attempt by claimants to compel executive action in the context of environmental harms and risks. On the other hand, Article 1 of the Additional Protocol has usually been used to question government action aiming at pursuing what could be described as environmental protection objectives.[468] Likewise, Article 6 (right to a fair trial) is, in some cases, used to restrict executive actions taken in pursuance of domestic environmental provisions[469] and Article 10 (right to freedom of expression) is referred by environmental campaigners to defend activities of environmental activism.[470]

These different uses of the provisions highlight the varied nature of environmental rights adjudication before the European Court of Human Rights (ECtHR). However, they also show the point that environmental adjudication is

[467] See the text of the ECHR on its official website.

[468] See, for example, Council of Europe, *Manual on Human Rights and the Environment* (Strasbourg: Council of Europe Publishing, 2012) <https://www.echr.coe.int/LibraryDocs/DH_DEV_Manual_Environment_Eng.pdf> (accessed on 2020.01.05).

[469] *Zander v. Sweden* (application no. 14282/88) ECtHR Judgment, 25 November 1993 <http://hudoc.echr.coe.int/eng?i=001-57862> (accessed on 2020.01.10).

[470] *Steel and Morris v. United Kingdom* (application no. 68416/01) ECtHR Judgment, 15 February 2005 <http://hudoc.echr.coe.int/eng?i=001-68224> (accessed on 2020.01.10); and *Mamère v. France* (application no. 12697/03) ECtHR Judgment, 7 November 2006 <http://hudoc.echr.coe.int/eng?i=001-77843> (accessed on 2020.01.10).

directed against a background of human rights norms and not only by a desire to develop a prescriptive doctrine of environmental protection *per se*.[471]

Actually, Articles 2 and 8 of the ECHR have been serving as the most important provisions for environmental claims before the Court. They pursue rather different objectives, but the ECtHR has found that, for the purposes of environmental claims, "in the context of dangerous activities the scope of the positive obligations under Article 2 of the Convention largely overlap with those under Article 8."[472] As a result, it has also been concluded that industrial activities, causing harm to the health and well-being of an applicant and his/her family may potentially trigger the application of Article 8.[473] For that to happen, the harm, firstly, has to adversely impact the enjoyment of an applicant's home and quality of private and family life and, in a second moment, it has to exceed a certain minimum level, which goes beyond what would ordinarily be accepted as "every day nuisances."[474]

With regard to this question, the ECtHR recently emphasised that:

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[471] Ole W. Pedersen, "European Court of Human Rights and environmental rights," in James R. May, and Erin Daly (eds.), *Human Rights and the Environment: Legality, Indivisibility, Dignity and Geography* (Cheltenham: Edward Elgar, 2019), 463-471.

[472] *Budayeva and others v. Russia* (applications nos. 15339/02, 21166/02, 20058/02, 11673/02, and 15343/02) ECtHR Judgment, 20 March 2008 <http://hudoc.echr.coe.int/eng?i=001-85436> (accessed on 2020.01.10), at 134.

[473] See, for example, *Fadeyeva v. Russia* (application no. 55723/00) ECtHR Judgment, 9 June 2005 <http://hudoc.echr.coe.int/eng?i=001-69315> (accessed on 2020.01.06), and *López Ostra v. Spain* (application no. 16798/90) ECtHR Judgment, 9 December 1994 <http://hudoc.echr.coe.int/eng?i=001-57905> (accessed on 2020.01.10).

[474] *Fadeyeva v. Russia*, and *Ivan Atanasov v. Bulgaria*, ECtHR Judgment, 2 December 2010 (application no. 12853/030) < http://hudoc.echr.coe.int/eng?i=001-101958> (accessed on 2020.01.10) as well as *Borysiewicz v. Poland*, decision of 1 July 2008 (application no. 71146/01) <http://hudoc.echr.coe.int/app/conversion/pdf/?library=ECHR&id=001-87213&filename=001-87213.pdf&TID=ihgdqbxnfi> (accessed on 2020.01.10). See also *Hardy and Maile v. United Kingdom* (application no. 31965/07) ECtHR Judgment, 14 February 2012 <http://hudoc.echr.coe.int/eng?i=001-109072> (accessed on 2020.01.10).

> "the assessment of the minimum level is relative and depends on all the circumstance of the case, such as, the intensity and duration of the nuisance and its physical or mental effects. The general context of the environment should also be taken into account."[475]

This means that, as also happens within domestic judicial review proceedings, each application is examined on its merits and in light of the particular domestic circumstance faced by the plaintiff.

Moreover, an essential element which for the ECtHR to assess if the violation has taken place is not necessarily the state of the environment. Instead, the state of the regulatory regime aimed at providing environmental protection in the responding state can be the most relevant component. This means that when national authorities fail to implement their domestic regulatory systems, the Court may use this as a focal point to find a violation of the ECHR.[476] A large amount of the Court's environmental case law has also a strong element of domestic legislative frameworks and domestic judicial decisions. An example of that is the *Taşkin v. Turkey* decision, concerning mining operations emitting high levels of hazardous gases. One of the main elements of the decision was the disregard by the Turkish authorities for judicial decisions, ordering the closure of the mining activities.[477] Other examples, aiming at minimising environmental harms, may include circumstances where national authorities fail to take

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[475] *Dzemyuk v. Ukraine*, decision of 4 September 2014 (application no. 42488/02) <http://hudoc.echr.coe.int/fre?i=001-146357> (accessed on 2020.01.10), at 78. See also *Hardy and Maile*, at 188.

[476] Ole W. Pedersen, "The Ties that Bind: The Environment, the European Convention on Human Rights and the Rule of Law," *European Public Law*, Vol. 16, Issue 4 (2009), 571- 595.

[477] *Taskin and Others v. Turkey (application no. 46117/99)* ECtHR Judgment, 10 November 2004 <http://hudoc.echr.coe.int/eng?i=001-67401> (accessed on 2020.01.06); and *Okyay and others v. Turkey* (application no. 36220/97) ECtHR Judgment, 12 July 2005 <http://hudoc.echr.coe.int/eng?i=001-69672> (accessed on 2020.01.10).

reasonable measures against harmful operations that disrespect domestic environmental provisions.[478]

The ECtHR has been finding that the application of Articles 2 and 8 may be utilised when there is a material risk of exposure to a certain harm, and not merely when such harm is manifested and results in an applicant suffering it. Actually, there is a number of cases where the Court has concluded that responding governments were responsible for not sufficiently protecting individuals from environmental risks. Included in these risks are those arising from natural disasters or emanating from industrial pollution.[479] The obligation provided in Article 2 for states to safeguard the lives of those within their jurisdiction is thus the ground for this positive interpretation.[480]

It is obvious that the application of this obligation mostly occurs in the context of civil and political rights, which are based on the fundamental principles of democracy. Nevertheless, its extension to environmental claims has been significant. It expands the scope of the ECHR's obligations into the area of prevention of harm (that is usually reserved for domestic and/or international regulatory initiatives). Moreover, it implicitly expands the potential application of the ECHR's obligations beyond the more traditional scope of *ex post* application of the Convention.[481]

This enlargement of the ECHR's scope in order to cover not yet materialised environmental harms may complicate the role of the Court in adjudicating environmental matters. In fact, most of the ECtHR's adjudication in this field relates to rule of law claims where domestic authorities have failed to adhere to

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[478] See, for example, *Moreno Gómez v. Spain* (application no. 4143/02) ECtHR Judgment, 16 November 2004 <http://hudoc.echr.coe.int/eng?i=001-67478> (accessed on 2020.01.10).

[479] Compare, for example, *Budayeva* to *Tătar v. Romania*.

[480] *Budayeva*, at 128.

[481] In this sense, Pedersen, "European Court of Human Rights and environmental rights" (2019), 467.

domestic environmental standards. And when it happens, the Court plays the role of an enforcer of fundamental rights. This happens because the perception of environmental risks is an extremely complex exercise and it naturally varies from one jurisdiction to another.[482] Therefore, the ECtHR must be cautions in adjudicating these specific cases. It indeed needs to be alert to a large array of factors through the application of its doctrine of margin of appreciation.[483]

In an analysis of the central characteristics of the ECtHR's case law in the field of environmental harms and risks, Pedersen argues that the environmental element of this body of law is primarily contingent upon the core, fundamental rights found in the Convention. The author also finds that, in developing this case law, the ECtHR usually has to balance between seeking to develop an interpretation that reflects current conditions and concerns regarding environmental harms and risks, remaining simultaneously loyal to the core of the Convention with respect to fundamental human rights. This balance is reflected in the case law through the margin of appreciation as well as in the content of the core obligations stemming from the ECtHR's case law. However, Pedersen concludes that the Court´s case law needs to develop a deeper appreciation of the possible variations found in environmental law more broadly (both in international and EU law). This will certainly impact the future of its doctrine and the role played by environmental rights within the Convention as well.[484]

Actually, Pedersen explains that despite the absence of an explicit environmental right in the European Convention, the ECtHR has managed to develop an elaborate and extensive body of case law which all but in name provides for a

[482] For a broader analysis, see Mary Douglas, and Aaron Wildavsky, *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers* (Berkeley: University of California Press, 1982).

[483] See, for all, Pedersen, "European Court of Human Rights and environmental rights" (2019), 465-467.

[484] Pedersen, "European Court of Human Rights and environmental rights" (2019), 471.

right to a healthy environment.[485] In effect, a paradigmatic recent situation, under the principles of the ECHR, was the *Netherlands v. Urgenda* Case, where, on 20 December 2019 the Dutch Supreme Court concluded that the Dutch government must reduce emissions immediately in line with its human rights obligations. This case is considered to be the first in the world in which citizens established that their government has a legal duty to prevent dangerous climate change. And also in this case, duty of care is argued under Articles 2 and 8 ECHR, given that climate and environmental protection include environment-related situations that affect or threaten to affect the right to life and environment-related situations connected with the right to private life, family life, home and correspondence.[486] This case was an important victory for the development of climate justice and it is expected that new similar cases and decisions will follow this one in a very close future.

3.2.2. An almost "Inter-American" perspective: *vida digna*

After the Second World War, states around the world were understood to violate human rights – including human dignity. This meant that millions of people had no effective protection.

Based on the idea of dignity, the Inter-American Court of Human Rights (IACtHR) has developed the concept of "*vida digna*"[487] to impose positive

[485] Ole W. Pedersen, "The European Court of Human Rights and International Environmental Law," in John H. Knox, and Ramin Pejan (eds.), *The Human Right to a Healthy Environment* (Cambridge: Cambridge University Press, 2018), 86-96.

[486] See *State of the Netherlands v. Urgenda Foundation* Judgment No. 19/00135 of 20 December 2019, <https://www.urgenda.nl/wp-content/uploads/ENG-Dutch-Supreme-Court-Urgenda-v-Netherlands-20-12-2019.pdf> (accessed on 2020.02.10). It concluded that the Dutch State is obliged to reduce, by the end of 2020, the emission of greenhouse gases originating from Dutch soil by at least 25% compared to 1990, and the courts can order the State to do so.

[487] Spanish term for a "dignified" or "decent" life.

obligations on the State, in order to guarantee a right to life, including suitable environmental conditions.[488]

The IACtHR was created in 1979, as an autonomous judicial institution based in the city of San José, Costa Rica. Together with the Inter-American Commission on Human Rights (IACHR), it intends to make up the human rights protection system of the Organization of American States (OAS), which serves to uphold and promote basic rights and freedoms in the Americas. The Court rules on whether a State has violated an individual's human rights, rather than if individuals are guilty of human rights violations.[489]

However, not all members of the OAS are signatories or have even accepted the blanket jurisdiction of the Court. The US, Canada, or several of the English-speaking Caribbean nations are examples of that, due to having not ratified the American Convention on Human Rights (ACHR) – also known as the Pact of San José –, which was signed on 22 November 1969 and is open to all OAS member states.[490]

The IACtHR has developed the idea that the "dignified life" is a concept derived from the obligations of the State under the protection of the right to life.[491] Therefore, the Court has understood that States have two types of obligations: one negative – which means that they must not undermine the right to life – and one positive, according to which they must take the necessary measures to ensure the enjoyment of that right.

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[488] Juan Manuel Rivero Godoy, "*Vida digna* and environmental human rights in the Inter-American System," in in James R. May, and Erin Daly (eds.), *Human Rights and the Environment: Legality, Indivisibility, Dignity and Geography* (Cheltenham: Edward Elgar, 2019), 21-24 <https://www.uianet.org/sites/default/files/juriste_2018_3_bat.pdf> (accessed on 2020.01.05).

[489] See more information about the IACtHR <http://www.corteidh.or.cr/> (accessed on 2020.01.05).

[490] On the ACHR, see the website of the OAS <http://www.oas.org/dil/treaties_B-32_American_Convention_on_Human_Rights_sign.htm> (accessed on 2020.01.05).

[491] See Article 4 (Right to Life) of the ACHR.

The concept of *vida digna* thus appears in the context of the jurisprudence as an extension to the positive obligations of the State. The right to life, in its simplest sense, must be protected. However, the minimum conditions that allow citizens access to a *vida digna* must also be provided. According to this last, States must provide the conditions to ensure access to food, to a healthy environment, or to housing. This means that "the State has a positive obligation to provide the necessary conditions to develop a dignified life."[492]

This concern implies a number of environmental considerations, such as those regarding environmental damages which can affect access to housing, the right to work or to decent working conditions, or even to health. It is a concrete realisation of human dignity as a general principle of law or even international customary law that guides the proper protection of human rights. For example, a human right to a healthy environment, to health, safe drinking water, clean air, natural resources, housing, energy, transportation, or work would guarantee the minimum conditions for a dignified life.

Based on these principles, the IACtHR has used the positive obligations to ensure a decent life to recognise a set of rights that are not expressly provided by the Convention, such as the right to health, education, food, or drinking water.[493]

In many cases, it continues to be necessary to assert environmental interests under the rubric of other (first generation) rights, including those regarding speech, property, privacy, judicial process, and life. Nevertheless, in order to guarantee the access of human beings to a dignified life, which includes a safe

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[492] See *Ximenes Lopes v. Brazil*, IACHR Series C No. 139, IHRL 1523 (IACHR 2005) , IACtHR Judgement, 30 November 2005 < http://www.corteidh.or.cr/docs/casos/articulos/seriec_139_ing.pdf> (accessed on 2020.01.10).

[493] See *Kaliña and Lokono Peoples v. Suriname*, Judgment of November 25, 2015, Serie C, No. 309 <http://www.corteidh.or.cr/docs/casos/articulos/seriec_309_ing.pdf> (accessed on 2020.01.05); and *Kichwa Indigenous People of Sarayaku v. Ecuador*, Judgment of June 27, 2012, Serie C, No. 245 <http://corteidh.or.cr/docs/casos/articulos/seriec_245_ing.pdf> (accessed on 2020.01.05).

and healthy environment, it is essential to provide mechanisms to protect their living conditions, such as the legal and administrative means of securing access to justice.[494]

The concept of *vida digna* is, therefore, an interesting development in the application by the IACtHR of the protection of environmental rights. However, it does not have its full and effective application in the whole territory of the Americas, because it is not applied to most of the English-speaking American states (such as the US or Canada).

3.3. Examples of environmental rights

3.3.1. Healthy environment

One of the most discussed environmental rights is the right to a healthy environment. It is provided by an increasing number of constitutions and, therefore, could be easily considered, from a constitutional perspective, as the overarching environmental right regarding all the other ones.

Many constitutions recognise it as a fundamental right, and there is a substantial number of authors who suggested that it should be also universally recognised as a human right by the UN.[495]

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[494] See Rivero Godoy, "*Vida digna* and environmental rights in the Inter-American System" (2019), 481.

[495] See John Knox, and Ramin Pejan (eds.), *The Human Right to Healthy Environment* (Cambridge: Cambridge University Press, 2018); and Marcos A. Orellana, "The Case for a Right to a Healthy Environment," *World Policy* (March 1, 2018) <https://worldpolicy.org/2018/03/01/case-right-healthy-environment/> (2020.01.05); Marcos Orellana, "Reflections on the Right to a Healthy Environment: Comments on Rebecca Bratspies' Do We Need a Human Right to a Healthy Environment?," *Santa Clara Journal of International Law*, Vol. 13, Issue 1 (2015), 71-79.

A healthy environment free of contamination or alteration is a minimal and necessary condition to ensure the existence of dignified human life.[496] Actually, Hayward makes and defends:

> "the claim that a right to an adequate environment genuinely is, if any rights are, a universal moral right – that is, a moral right that can and should be universally institutionalized."[497]

As examples of constitutional recognition of the right to a healthy environment, it would be possible to present the Portuguese constitutional Article 66, no. 1 (from 1976), which provides that "Everyone has the right to a humane, healthy and ecologically balanced environment of life and the duty to defend it." At the same time, and curiously the other Iberian state (Spain), provides in the Article 45, no. 1 of the 1978 constitution, that "Everyone has the right to enjoy an adequate environment for the development of the person, as well as the duty to preserve it."

These European states were the first nations to recognise the right to live in a healthy environment as a fundamental right,[498] and still it is not universally recognised as a human right by the UN. In fact, there are strong arguments in favour of recognising a universal human right to a healthy environment, which could increase efforts to protect environmental rights generally. Nevertheless, it is still unclear how such a right could be implemented universally with any kind of effectiveness.

3.3.2. Clean air

[496] Rivero Godoy, "*Vida digna* and environmental rights in the Inter-American System" (2019), 476.
[497] Hayward, *Constitutional Environmental Rights* (2005), 47.
[498] Boyd, *The Environmental Rights Revolution* (2012), 62.

The right to a clean air and to the control of pollution is one of the most relevant environmental rights. No one can enjoy a healthy life under an environment without the protection of a clean air.

Air pollution represents a major threat both to health and to the environment. And though clean air is considered to be a basic requirement of human health and well-being, air pollution continues to pose a significant threat to health and environment worldwide.[499]

Rather than a right, Miller considers clean air more as a collective goal, rather than an individual right,

> "[g]iven that the atmosphere is a common property resource, history suggests however that the achievement of that goal entails the extinction, rather than the extension, of individual rights."[500]

Dworkin has distinguished between rights and goals, explaining that

> "[a] goal is a nonindividuated political aim, that is, a state of affairs whose specification does not (…) call for any particular opportunity or resource or liberty for particular individuals".[501]

This issue is controversial. However, the existence of a large number of different legislations, and namely statutes which intend to protect air quality and the stratospheric ozone layer demonstrates that, being a right or a goal, clean air is a relevant priority in environmental protection issues.[502]

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[499] World Health Organisation, *Air Quality Guidelines for Europe*, Second Edition, European Series, No. 91 (2000), 7 <http://www.euro.who.int/__data/assets/pdf_file/0005/74732/E71922.pdf> (accessed on 2020.01.07).

[500] Miller, *Environmental Rights: Critical Perspectives* (1998), 92.

[501] Dworkin, *Taking Rights Seriously* (2013), 116.

[502] See the example of the US Clean Air Act. For more information, see the Environmental Protection Agency's website <https://www.epa.gov/clean-air-act-overview/clean-air-act-text> (accessed on 2020.01.05).

But how it gets enforced and whether it can be modified or repealed depends on whether it is a right and what kind. For example, in the US, the right to clean air is more understood as a right to access to justice. In fact, influenced by the example of the United Kingdom (UK) Clean Air Act of 1956,[503] the US Clean Air Act of 1963[504] imposes obligations to government agencies and regulated entities. Courts supervise regulated entities, what makes it as a qualified right to go to court.

3.3.3. Clean water and sanitation

The Resolution 64/292 of the UN General Assembly explicitly recognised, on 28 July 2010, on its 108th plenary meeting, the human right to water and sanitation and acknowledged that clean drinking water and sanitation are essential to the realisation of all human rights. The Resolution calls upon States and international organisations to provide financial resources, help capacity-building, and transfer technology in order to help countries, in particular developing countries, to provide safe, clean, accessible and affordable drinking water and sanitation for all.[505]

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[503] The UK Clean Air Act was enacted to respond to London's Great Smog of 1952 and represented a milestone in the development of legal frameworks in the protection of the environment <http://www.legislation.gov.uk/ukpga/Eliz2/4-5/52/enacted> (accessed on 2020.02.09). After successive modifications, it was then repealed by the Clean Air Act of 1993, which consolidated the Clean Air Acts of 1956 and 1968 and certain related enactments, with amendments to give effect to recommendations of the Law Commission and the Scottish Law Commission <http://www.legislation.gov.uk/ukpga/1993/11/pdfs/ukpga_19930011_en.pdf> (accessed on 2020.02.09).

[504] 42 U.S.C. §7401 et seq. (1963). See more on the EPA webpage <https://www.epa.gov/laws-regulations/summary-clean-air-act> (accessed on 2020.01.05).

[505] See more about Human Rights to Water and Sanitation, on UN-Water webpage <https://www.unwater.org/water-facts/human-rights/> (accessed on 2020.01.05). For more information on the issue, see also the website of the UN Department of Economic and Social

Contrary to the right to a healthy environment, this is a right universally recognised by the UN and, consequently, an explicit human right. Today, the focus is not only on the right to water and the right to clean water, but more and more on the "right to safe and clean drinking water and sanitation."[506]

However, in the case of the US, the right to clean water is at a rather similar level to that to clean air, in what regards its protection. It is more a negative right than a positive one. Gray, for example, introduces it as a property right.[507]

The Millennium Development Goals (MDGs), approved by the UN Millennium Declaration[508], already included a target to reduce the number of people without sustainable access to safe drinking water by 2015. It was a right recognised as fundamental to human needs.

With the following 2030 Agenda and its Sustainable Development Goals (SDG), clean and safe drinking water continued to be recognised as a major target of the

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Affairs dedicated to the "International Decade for Action 'Water for Life' 2005-2015" <http://www.un.org/waterforlifedecade/human_right_to_water.shtml> (accessed 2020.01.05).

[506] See the Resolution adopted by the General Assembly on 28 July 2010 (A/RES/64/292) <https://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/64/292> (accessed on 2020.01.05). See also, on this issue and from the perspective of courts, WaterLex and WASH United, *The Human Rights to Water and Sanitation in Courts Worldwide: A Selection of National, Regional and International Case Law* (Geneva: WaterLex, 2014) <https://www.waterlex.org/new/wp-content/uploads/2015/01/Case-Law-Compilation.pdf> (accessed on 2020.01.10). Also see J.M. Adogo, R.N. Malcolm, T. Kaime, L. Okotto, K. Okurut, and A. Tsinda, "The Right to Sanitation in Legal Frameworks with Reference to urban Informal Settlements of Kenya, Uganda and Rwanda," in *Royal Institution of Chartered Surveyors (RICS) Legal Research Symposium* (Las Vegas, NV: Arizona State University, 2012).

[507] See Brian E. Gray, "The Property Right in Water," *Hastings West–Northwest Journal of Environmental Law & Policy*, Vol. 9, No. 1 (2002), 1-29.

[508] See the Millennium Declaration (Resolution 55/2), of 8 September 2000 <https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_55_2.pdf> (accessed on 2020.01.05). The MDGs were later replaced by the 2030 Agenda, which approved the Sustainable Development Goals (SDG), through the Resolution 70/1, adopted by the General Assembly on 25 September 2015 (A/RES/70/1) <https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E> (accessed on 2020.01.05).

UN. Goal 6 was expressly adopted to "ensure availability and sustainable management of water and sanitation for all."[509]

Looking at the reality of peri-urban neighbourhoods in developing countries, only small independent water vendors are often responsible for water supply and for filling critical gaps in the municipal systems. However, there is a large concern about the quality and price of the water they provide. That is the reason why such vendors need to be recognised and regulated due to their role in meeting basic water needs. Recognising that, there still is a lack of regulation in realities such as Kenya or Ethiopia, where preoccupations regarding price and quality remain. That is the reason why Ayalew et al argue that small independent water vendors must be recognised as part of regulatory frameworks, in order to

[509] And more specifically, through the following targets:
"6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all;
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations;
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally;
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity;
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
6.b Support and strengthen the participation of local communities in improving water and sanitation management."

increase access to water for the poor and assist in the realisation of the right to water and intergenerational equity.[510]

3.3.4. Housing

The right to housing is recognised, not only in some constitutions[511] as a fundamental right, but also in a number of international human rights instruments.[512] As a result, Article 25 of the Universal Declaration of Human Rights (UDHR) recognises the right to housing as part of the right to an adequate standard of living, providing that:

> "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, *housing*[513] and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control."[514]

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[510] Mulugeta Ayalew et al, "Small Independent Water Providers: Their Position in the Regulatory Framework for the Supply of Water in Kenya and Ethiopia," *Journal of Environmental Law*, Vol. 26 (2014), 105-128.

[511] As an example, the Portuguese Constitution provides it in Article 65, which sets that in its paragraph 1 that "Everyone has the right, for himself and his family, to adequate housing, hygiene and comfort, and to preserve personal intimacy and family privacy." The Brazilian Constitution also provides it in Article 6, along with education, health, food, transportation, leisure, safety, social security, maternity and child protection, as well as assistance to the homeless.

[512] See, for example, Article 11(1) of the International Covenant on Economic, Social and Cultural Rights (ICESCR), which guarantees the right to housing as part of the right to an adequate standard of living. The text of the ICESCR, which was adopted and opened for signature, ratification and accession by General Assembly resolution 2200A (XXI) of 16 December 1966 and entry into force 3 January 1976, in accordance with article 27, is available on the OHCHR website <https://www.ohchr.org/en/professionalinterest/pages/cescr.aspx> (accessed on 2020.01.05).

[513] Highlighted by the author.

[514] See UDHR.

Moreover, it is possible to find in Article 8(1) of the ECHR a right to private and family life, home and correspondence.[515]

Although, the right to housing is provided in a large number of different instruments, it does not mean that all citizens of those countries which constitutions intend to protect that right have access to a decent home (or even a home itself).[516] This is thus an example of the difficulty of legal systems to effectively protect environmental rights.

A similar right to housing would be right to shelter, which was established in some US state legislations, such as the ones of Massachusetts[517], California (for runaway children)[518] or even New York, after *Callahan v. Carey* lawsuit.[519]

3.3.5. Access to energy

[515] For more developments on this specific issue, see Alexandra Aragão, "Direito ao respeito pelo ambiente associado à proteção do domicílio", in Paulo Pinto de Albuquerque (org.), *Comentário da Convenção Europeia dos Direitos do Homem e dos Protocolos Adicionais*, Vol. I (Lisboa: Universidade Católica Editora, 2019), 1561-1595.

[516] The already mentioned cases of Portugal and Brazil are clear examples of that, but also South Africa, where section 26 (Housing) of Chapter Two of the Constitution sets that "Everyone has the right to have access to adequate housing" (par. 1).

[517] Chapter 450 of the Acts of 1983, signed by Gov. Michael Dukakis, established a family's "Right to Shelter," ensuring a family would have a place to stay and establishing the state's first publicly funded homeless shelter. See the mentioned provisions <https://malegislature.gov/Laws/SessionLaws/Acts/2014/Chapter450> (accessed on 2020.01.05).

[518] Section 65583 of the Government Code, relating to housing. See the mentioned provisions <https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=65583> (accessed on 2020.01.05).

[519] *Callahan v. Carey*, No. 79-42582 (Sup. Ct. N.Y. County, Cot. 18, 1979) <https://www.escr-net.org/caselaw/2006/callahan-v-carey-no-79-42582-sup-ct-ny-county-cot-18-1979> (accessed on 2020.01.05) was a landmark case in the New York County Supreme Court which set the duty of New York State to provide shelter for homeless men. It was brought in 1979 and settled with a negotiation in 1981 of a consent decree, governing the provision of homeless shelters by New York City.

The right to the access to energy is not an express right that is usually provided in constitutions or international laws. It is a claim that is relatively recent in legal discussions on environmental rights, but already accepted within the reality of the EU.[520] However, it is possible to find an increasing literature in this area, as well as a recognition of the claim to the access to energy and also heating, namely through the theories of energy justice.[521]

Actually, McCauley and Heffron suggest just transition as a new framework of analysis that brings together climate, energy and environmental justice scholarships. The term was coined to link the promotion of clean technology with the assurance of green jobs. However, the Paris Agreement marked a global acceptance that a more rapid transition is needed to avert dangerous consequences related to climate change. Therefore, climate, energy and environmental justice are now on the table as new narratives for tackling current injustices within modern societies. The framework for a just energy transition intends to offer a new space for developing interdisciplinary transitions and more sensitive approaches to exploring and promoting distributional, procedural, and restorative justice, as a new triumvirate of principles to address

[520] The Electricity Directive – Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0944> (accessed on 2020.01.06) – affirms in its Article 27 that household customers have a "right to be supplied with electricity of a specified quality within their territory at competitive, easily and clearly comparable, transparent and non-discriminatory prices," including possibly through a "supplier of last resort". In this sense, see Marlies Hesselman et al, "The Right to Energy in the European Union," *ENGAGER European Energy Poverty*, Policy Brief No. 2 (June 2019), 1-6 <https://ssrn.com/abstract=3466803> (accessed on 2020.01.05).

[521] Raphael J. Heffron and Darren McCauley, "The concept of energy justice across the disciplines," *Energy Policy*, Vol. 105 (2017), 658-667.

inequalities with regard to access to energy by members of communities in certain territories.[522]

3.3.6. Transportation

Another relevant issue in urban territories regards the access to transports and mobility, especially between homes and workplaces (commuting), commercial amenities, or other infrastructures where public or city services are provided.

Most of the cities around the world intend to implement more sustainable urban transport systems with a view to reduce accidents, congestion, air and noise pollution, and to improve social interactions, liveability and amenity values. Contemporary transport systems are thus seen as unfair. They tend to favour motorised transport, accepting that considerable environmental and social burdens are put on more sustainable forms of transportation, other traffic participants and society as a whole.[523] Modern communities are exposed to traffic risks and pollutants, the distribution of space is not equal, and transport time is usually long. Therefore, urban transport injustice influences changes in today's urban planning, transport infrastructure development and traffic management. Simultaneously, transportation policies at the local, regional, state, and national levels have direct impacts on urban land-use and development patterns. And efforts to challenge discrimination, segregation, and inequitable transportation policies are now encompassing a broad range of related social impacts.[524]

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[522] Darren McCauley and Raphael Heffron, "Just transition: Integrating climate, energy and environmental justice," *Energy Policy*, Vol. 119 (August 2018), 1-7.

[523] Stefan Gössling, "Urban transport justice," *Journal of Transport Geography*, Vol. 54 (2016), 1-9.

[524] A substantial milestone in the enhancing of transportation equity was the reform on public transit prices in the Portuguese metropolitan areas, which example is the Lisbon Metropolitan Regulation No. 278-A/2019 of 27 March, providing for reduced values for municipal and

For these reasons, transportation equity intends to address inequities in transportation planning and project delivery systems. It may vary from place to place, but most communities would agree that an equitable transportation system should: (i) ensure opportunities for meaningful public involvement in the transportation planning process, particularly for those communities that most directly feel the impact of projects or funding choices; (ii) be held to a high standard of public accountability and financial transparency; (iii) distribute the benefits and burdens from transportation projects equally across all income levels and communities; (iv) provide high-quality services – emphasising access to economic opportunity and basic mobility – to all communities, but with an emphasis on transit-dependent populations; and (v) equally prioritise efforts both to revitalise poor and minority communities and to expand transportation infrastructure.[525]

In fact, transportation equity is also about environmental justice, metropolitan equity, and the just distribution of resources. Whilst toxic dumps and polluting industries are more likely to find their way into or be located close to low-income and minority communities, the same is likely to happens with the access to transports and mobility.[526]

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metropolitan travelcards (Article 8) <https://dre.pt/home/-/dre/121665699/details/maximized> (accessed on 2020.02.10).

[525] See Thomas W. Sanchez and Marc Brenman, *The Right to Transportation: Moving to Equity* (Abingdon: Routledge, 2017), 2-10.

[526] See Andreas Pettersson, *Out and About in the Welfare State – the Right to Transport in Everyday Life for People with Disabilities in Swedish, Danish and Norwegian Law* (Umeå: Umeå University, 2015) <http://www.diva-portal.org/smash/get/diva2:802039/FULLTEXT01.pdf> (accessed on 2020.01.05); Wojciech Kębłowski et al, "Re-politicizing Transport with the Right to the City: An Attempt to Mobilise Critical Urban Transport Studies," *Cosmopolis* (2016), 2-33 <https://cris.vub.be/en/publications/repoliticizing-transport-with-the-right-to-the-city-an-attempt-to-mobilise-critical-urban-transport-studies(f48c7434-1a79-4eef-9889-888786175bff).html> (accessed on 2020.01.05); and Saeid Nazari Adli and Stuart Donovan, "Right to the city: Applying justice tests to public transport investments," *Transport Policy*, Vol. 66 (2018), 56-65.

3.3.7. Information and transparency

In the territory of the EU, the right to information (and consequent transparency in the administration) is derived from European law. It is based on the implementation of the European Council Directive 2003/4/CE on public access to environmental information. The principle behind the law is that giving the public access to environmental information will encourage greater awareness of issues that affect the environment. Greater awareness helps increase public participation in decision-making; it makes public bodies more accountable and transparent and it builds public confidence and trust in them.

An important source for this EU Directive in the issues of information and transparency is the already referred "Aarhus Convention." Part of the Aarhus Convention says what its signatories must do to provide access to environmental information, and the EU signed the Convention, which Article 1 states as follows

> "In order to contribute to the protection of the right of every person of present and future generations to live in an environment adequate to his or her health and well-being, each party shall guarantee the rights of access to information, public participation in decision-making, and access to justice on environmental matters in accordance with the provisions of this Convention."

On the other hand, the US are world widely reputed as an "open society",[527] which means that, according to Krämer, it is a place

> "where governments derive their right to govern from the consent of the governed and where the setting of standards does not consist of

[527] William A. Wilcox, Jr., "Access to Environmental Information in the United States and the United Kingdom," *Loyola of Los Angeles International and Comparative Law Review*, Vol. 23, No. 2 (March 2001), 121-247.

> transforming shadows of the Platonic idea of Justice into a piece of legislation, but are conceived, scheduled and accepted by way of democratic procedure."[528]

In the reality of the US, the Freedom of Information Act (FOIA) generally provides that any person has the right to request access to federal agency records or information except to the extent the records are protected from disclosure by any of nine exemptions contained in the law or by one of three special law enforcement record exclusions. Therefore, once applied generally it can also be applied to environmental issues.[529] It is also possible to find in different states and counties subnational open records and open meeting laws (state governments and legislations often strongly and strictly enforced), such as Florida's Public Records Act[530] and New Jersey's Open Public Records Act.[531] These laws specifically direct state and local agencies to publish certain types of information, preserve official records, and make them available to the public upon request. They are relevant in order to permit citizens to access public information that can be relevant for further participation in other public processes.

3.3.8. Participation

[528] Ludwig Krämer, "The Open Society, Its Lawyers and Its Environment," *Journal of Environmental Law*, Vol. 1, Issue 1, (1989), 4.

[529] For more information on FOIA, see the Department of State website <https://foia.state.gov/Learn/FOIA.aspx> (accessed on 2020.01.05).

[530] See 2014 Florida Statutes, Title X – Public Officers, Employees, and Records – Chapter 119 (Public Records) <https://law.justia.com/codes/florida/2014/title-x/chapter-119/> (accessed on 2020.01.05).

[531] See 2013 New Jersey Revised Statutes, Title 47 – Public Records – Section 47:1A-1 - Legislative findings, declarations [NJ Rev Stat § 47:1A-1 (2013)] <https://law.justia.com/codes/new-jersey/2013/title-47/section-47-1a-1/> (accessed on 2020.01.05).

In order to protect the environment and human rights, both the Article 21 of the UDHR[532] and the Article 25 of the International Covenant on Civil and Political Rights[533] recognise that everyone has the human right to participate in environmental decision-making.

The rights of everyone to take part in the government of their country and in the conduct of public affairs are consequently human rights and the right of participation is also critical to the exercise of other rights. As it was explained in the Report of the Special Rapporteur on the adverse effects of the illicit movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights, *Okechukwu Ibeanu*, (A/HRC/7/21, 18 February 2008) the right of information and the right of participation in decision-making are:

> "both rights in themselves and essential tools for the exercise of other rights, such as the right to life, the right to the highest attainable standard of health, the right to adequate housing and others."[534]

3.4. Examples of specific cases

These are only some possible examples of rights related to environmental issues.[535]

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[532] See the UDHR.

[533] See the ICCPR on the UNHR-OHCHR website <https://www.ohchr.org/en/professionalinterest/pages/ccpr.aspx> (accessed on 2020.01.05).

[534] Report of the Special Rapporteur on the adverse effects of the illicit movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights, Okechukwu Ibeanu, <http://undocs.org/A/HRC/7/21> (accessed on 2020.01.05).

[535] Recently, in Pakistan, the Lahore High Court also upheld the right to food, including protection against wastage of excess food, as a fundamental right in Pakistan. The judge stated that "the right to life can only be enforced if certain ingredients are present, food being the first and foremost;" and "It is the duty of the State to legislate, to protect the wastage of excess food and to start awareness campaigns to sensitize the people in this regard to achieve the target of food

Therefore, the connection between legal systems, their more theoretical characteristics, and the practical cases of real-life world are paramount to understand the application of possible environmental rights. In this specific case, the urban reality, with its social, ecological, and technological elements, is a place where law can certainly play an important catalyst role for solving a myriad of day-to-day problems and conflicts.[536]

3.4.1. Lisbon *Metro* case

One particular example of the importance that law and governance may represent in city life is the famous Portuguese judicial case *RLx 1-Fev.-1957*, in which the Lisbon Court of Appeal confirmed the judicial order, on a provisional procedure, to suspend the public works of the Lisbon underground train (*Metropolitano de Lisboa*) in an important avenue of the Portuguese capital (Avenida Columbano Bordalo Pinheiro, Lisbon, Portugal), between midnight and 7 a.m.

The reason for that suspension was the continuous working of the machines, which affected the inhabitants' sleep and their "right of existence" (provided in the Civil Code and the Constitution of that time).[537] In 1960, that decision was followed by a similar one, regarding the construction of tunnels for the underground, in which the Lisbon Court of Appel reaffirmed the recognition of the above-mentioned right of existence.[538]

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security." This decision ordered that ordered that: "Government Departments…are required by law to do in order to preserve, conserve and manage excess of food and wastage of food." See *Muhammad Ahmad Pansota, et al., v. Federation of Pakistan, et al.* (HCJ DA 38, on Writ Petition No. 840 of 2019, Lahore High Court, Judgment given on 24 December 2019) <https://sys.lhc.gov.pk/appjudgments/2019LHC4124.pdf> (accessed on 2020.01.09).

[536] Present overarching points and lessons or insights to be drawn from the examples.

[537] *RLx 1-Fev.-1957* (Sousa Monteiro), BMJ 67 (1957), 307-310 – RT 75 (1957), 381.

[538] *RLx 2-Mar.-1960* (Cardoso de Figueiredo), JR 6 (1960) 1, 225-228 (227/II).

3.4.2. South African *Mazibuko* and *UK Water Services* cases

The connection between law and the city in other different realities of the world can be seen in the *Mazibuko v. City of Johannesburg* case,[539] in which the High Court and subsequently the Supreme Court supported the claim and declared as unlawful, discriminatory and unfair the city policy of implementing prepayment water meters. Nevertheless, the Constitutional Court reviewed the previous decisions of the lower courts,[540] legitimising the enactment of that policy, namely the application of prepaid meters to low-income communities.[541]

The same issue was addressed in the United Kingdom, though with a happier ending. The Water Industry Act 1999, s. 1, was held to definitely prohibit the disconnection for non-payment and the use of prepayment metering devices. The case arose when six urban councils sought judicial review against the Director-General of Water Services.[542]

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[539] *Mazibuko and Others v City of Johannesburg and Others* (06/13865) [2008] ZAGPHC 491; [2008] 4 All SA 471 (W) (30 April 2008) <http://www.saflii.org/za/cases/ZAGPHC/2008/491.html> (accessed on 2020.01.10); *City of Johannesburg and Others v Mazibuko and Others* (489/08) [2009] ZASCA 20; 2009 (3) SA 592 (SCA); 2009 (8) BCLR 791 (SCA); [2009] 3 All SA 202 (SCA) (25 March 2009) <http://www.saflii.org/za/cases/ZASCA/2009/20.html> (accessed on 2020.01.10). The case was named after the first applicant's name: Lindiwe Mazibuko.

[540] *Mazibuko and Others v City of Johannesburg and Others*, Case CCT 39/09 [2009] ZACC 28, 18 June 2010 <https://cer.org.za/virtual-library/judgments/constitutional-court/mazibuko-and-others-v-city-of-johannesburg-and-others-cct-3909-2009-zacc-28-2010-3-bclr-239-cc-2010-4-sa-1-cc> (accessed on 2020.01.10), para. 169.

[541] For more development on this issue, see Linda Stewart, "Adjudicating Socio-Economic Rights under a Transformative Constitution," *Penn State International Law Review*, Vol.28, No. 3 (2010), 487-512 <https://elibrary.law.psu.edu/cgi/viewcontent.cgi?article=1225&context=psilr> (accessed on 2020.01.10).

[542] *General of Water Services ex p. Lancashire County Council, Liverpool City Council, Manchester City Council, Oldham Metropolitan Borough Council, Tameside Metropolitan Borough Council and Birmingham Regina v. Director City Council*, CO/3468/96, CO/2575/96, CO/2873/96, CO/2638/96, CO/3599/96, CO/3152/96 [1998] 96 LGR 396: Decision of the Respondent to refuse to force a water

3.4.3. Berlin diesel case

Finally, a recent decision from the Berlin administrative court has ordered the capital of Germany to introduce driving bans for diesel vehicles in certain parts of eight roads suffering from pollution due to exceedingly high levels of nitrogen dioxide (NO_2).

As of mid-2019, driving bans must be introduced for diesel cars and trucks meeting the "Euro 5" or older emissions standards. Then the city of Berlin will decide whether it will also introduce bans for Euro 6 diesel vehicles. The Berlin court also ordered the city to examine whether it must introduce driving bans on many other roads to keep emissions within limits. After the mentioned decision, the Berlin diesel bans could also affect the federal government's own car fleet, as 28 cars met only the "Euro 5" standard or older.[543]

Nevertheless, the basis of the decision was not directly an environmental right, but the reduction of air pollution. Not all violations of environmental laws are directly violations of environmental rights. However, the effects of the decision, such as improvement of air quality, certainly correspond to a development in the protection of environmental rights, serving as the right to clean air and the right to a healthy environment as well.[544]

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undertaker to remove and not to install any more pre-payment devices in domestic homes - Applications for judicial review - Whether cutting off of water supplies by such devices is against the conditions of appointment of such water companies <http://www.hwa.uk.com/site/wp-content/uploads/2017/12/CD18.pdf> (accessed on 2020.01.10).

[543] *Streckenbezogene Diesel-Fahrverbote auch in Berlin* (Nr. 18/2018), Urteil der 10. Kammer vom 9. Oktober 2018 (VG 10 K 207.16) <https://www.berlin.de/gerichte/verwaltungsgericht/presse/pressemitteilungen/2018/pressemitteilung.747221.php> (accessed on 2020.01.10).

[544] After this decision, the Senate in Berlin decided to ban diesel vehicles in parts of the capital, on 23 July 2019. According to the decision, sections of eight roads that are to be off-limits for diesel

4. Sources of environmental rights

4.1. International law

Most of the rights provided by international law as environmental rights are part of declarations signed by states. And the main international law instrument proclaiming a large (or more complete) catalogue of human rights is the Universal Declaration of Human Rights.

Nevertheless, other declarations (or "charters") provide a number of rights, and particularly environmental rights, being not only those approved and signed under the scope of the UN, but also those signed at regional or continental levels.[545]

An historical example of an international declaration proclaiming environmental rights is the already mentioned Declaration of the United Nations Conference on the Human Environment (known as the "Declaration of Stockholm"), approved at the United Nations Conference on the Human Environment, which met at Stockholm from 5 to 16 June 1972. The Conference considered the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment. The Declaration of Stockholm provided in its Principle 1 the human rights to

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cars and trucks up to and including the Euro 5 emissions standard. See more on Berlin's webpage <https://www.berlin.de/en/news/5842730-5559700-senate-bans-diesel-cars-from-eight-stree.en.html> (accessed on 2020.01.05). Diesel bans have so far been mandated by courts and city councils in Aachen, Berlin, Bonn and Cologne, Darmstadt, Essen, Frankfurt, Gelsenkirchen, Hamburg, Mainz, Munich, and Stuttgart. See more on the IAA – *Internationale Automobil-Ausstellung* webpage <https://www.iaa.de/en/nmw/fuer-besucher/nmw-erleben/diesel-bans-a-status-quo> (accessed on 2020.01.05).

[545] Such as the African Charter on Human and Peoples' Rights, the American Convention on Human Rights, or the Charter of Fundamental Rights of the European Union – <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:12012P/TXT> (accessed on 2020.01.05).

> "freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations."[546]

This principle would be transposed later to the Principle 1 of the Declaration of Rio, recognising an "entitle[ment] to a healthy and productive life in harmony with nature."[547] [548]

More recently, the UN General Assembly adopted the *2030 Agenda for Sustainable Development*, which provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. This agenda has at its heart the 17 Sustainable Development Goals (SDGs), which are considered as an urgent call for action by all member states of the UN – both developed and developing ones – in a global partnership. Through the Resolution 70/1, adopted by the General Assembly on 25 September 2015, the UN recognised that ending poverty and other deprivations must go hand-in-hand with strategies that improve health

[546] See the Declaration of Stockholm, available on the IPCC website.

[547] See the Declaration of Rio de Janeiro, available on the UN website.

[548] These issues could suggest a discussion on the difference between aspirational and enforceable rights, or even aspirations that are not actually rights. Several legal instruments, such as declarations, agendas, or statements may form legally enforceable environmental rights or only "softer" law. Withing international law, the problems exist on the enforceability only against signatory nations, or against non-signatory nations, but also against multinational corporations and businesses, against local businesses, or even against individuals. And not all legal systems recognise the right of a person to sue someone for interfering with his/her right to a productive life in harmony with nature. For further reading on this topic, see Philip Harvey, "Aspirational Law," *Buffalo Law Review*, Vol. 52 (2004), 701-726; Ellen Wiles, "Aspirational Principles or Enforceable Rights? The Future for Socio-Economic Rights in National Law," *American University International Law Review*, Vol. 22, no. 1 (2006), 35-64; Ilias Trispiotis, "Socio-Economic Rights: Legally Enforceable or Just Aspirational?," *Opticon1826*, Issue 8 (2010), 1-10; and Sam Kalen, "An Essay: An Aspirational Right to a Healthy Environment," *UCLA Journal of Environmental Law*, Vol. 34, Issue2 (2016), 156-195.

and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.[549]

Climate change and its consequences usually disproportionately affect low-income countries and poor people in high-income countries. In that way, they affect human rights and social justice. From an environmental perspective, these consequences include increased temperature, excess precipitation in some areas and droughts in others, extreme weather events, and increased sea level. They adversely affect agricultural production, access to safe water, and worker productivity, and, by inundating land or making land uninhabitable and uncultivatable, will force many people to become environmental refugees. It is also possible to encounter adverse health effects caused by climate change, which may include heat-related disorders, vector-borne diseases, foodborne and waterborne diseases, respiratory and allergic disorders, malnutrition, collective violence, and mental health problems.[550]

The mentioned consequences naturally threaten civil and political rights and economic, social, and cultural rights, including rights to life, access to safe food and water, health, security, shelter, and culture. From a national or local perspective, the ones who most suffer are people who are most vulnerable to the adverse environmental and health consequences of climate change include poor people, members of minority groups, women, children, older people, people with chronic diseases and disabilities, those residing in areas with a high prevalence of climate-related diseases, and workers exposed to extreme heat or

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[549] The document *Transforming our world: the 2030 Agenda for Sustainable Development*, which represented an outcome of the UN summit for the adoption of the post-2015 development agenda is available on the UN website <http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E> (accessed on 2020.01.05).

[550] Barry S. Levy, and Jonathan A. Patz, "Climate Change, Human Rights, and Social Justice," *Annals of Global Health*, Vol. 81, Issue 3 (May-June 2015), 310-322.

increased weather variability. From a global perspective, inequity resides in relation to low-income countries, which produce the least GHGs, being more affected by climate change than high-income countries, which produce more GHGs. Low-income countries have far less capability to adapt to climate change than high-income countries.

Therefore, adaptation and mitigation solutions in order to address climate change are absolutely needed to protect human beings, and must be planned to protect human rights, promote social justice, and avoid new problems or the exacerbation of existing problems for vulnerable populations.[551]

4.2. European Union and United States Federal laws

In the EU legal panorama, it is possible to identify different sources, starting with the founding treaties, but also the Charter of Fundamental Rights of the European Union (CFREU), as well as directives, regulations, decisions, recommendations and communications.[552]

Environmental rights are mainly provided by treaties and the CFREU, more as principles than rights. Other legislation can also recognise rights, which could be classified as non-fundamental state-created rights[553], though also relevant for both the well-being of their subject and the protection of the environment in the territory of the EU. One example could be the Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003, on access to environmental information, which provides that individuals have the right to

[551] Levy and Patz, "Climate Change, Human Rights, and Social Justice" (2015), 310-322.

[552] Alina Kaczorowska-Ireland, *European Union Law*, Fourth (Abingdon: Routledge, 2016), 233-270.

[553] See the examples of possible classifications previously introduced in this dissertation.

access certain environmental information held by public authorities (see Article 1).[554]

The EU Charter makes, in its Article 52(5), a distinction between "rights" and "principles". These are two types of provisions that are binding. However, according to the Article 51(1), rights have to be "respected" and principles should be "observed". This means that, whereas the rights can be invoked by individuals directly before national courts, this is not the case for principles.

Some provisions are even explicitly identified in the Explanations relating to the EU Charter as principles. For example, Articles 25 (rights of the elderly), 26 (integration of persons with disabilities) and 37 (environmental protection). Other provisions are mentioned as provisions containing "both elements of a right and of a principle". Those are the cases of Articles 23 (equality between women and men), 33 (family and professional life) and 34 (social security and social assistance).

It is expected that further case law by the Court of Justice of the EU will provide increasing clarity in this matter, since it would seem to be incorrect to assume that provisions with the relevance of those listed in Chapter IV (Solidarity) all have the status of principles.[555]

On the other hand, in the reality of the US, although the federal constitution does not provide environmental rights, federal statutes (legislation) may recognise

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[554] Other example is the Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02003L0035-20161231> (accessed on 2020.01.05), which deals with public participation in decision-making and provides that member states must ensure that mechanisms exist to facilitate public participation in decisions about the environment.

[555] European Union Agency for Fundamental Rights, *Applying the Charter of Fundamental Rights of the European Union in law and policymaking at national level* (Luxembourg: Publications Office of the European Union, 2018) 20-21.

them. These congressional enactments can play an important role in the protection of the environment and the well-being of the citizens, since they are valid and in force for all the territory of the federation. However, as it is a federal state, these laws can only be effective if they regulate matters that are responsibility of the national government (or federal government).

In effect, an example of statute which could be seen as capable of recognising environmental rights to the citizens is the US CAA.[556] Nevertheless, that possibility is also controversial, given that the recognition of those rights is not expressly provided. Consequently, it is possible to say that the CAA gives citizens a right to access to justice, but it is not clear that it provides an environmental right.[557]

4.3. EU domestic and US state laws

Some EU Member States recognise, in their national constitutions, the protection of environmental rights. From Italy to Portugal or Spain, the recognition of those rights demonstrates that European states (as other countries worldwide) wanted

[556] See *South Coast Air Quality Mgmt. Dist. v. EPA*, 882 F.3d 1138 (2018) <https://www.leagle.com/decision/infco20180216198> (accessed on 2020.01.05), in which a management district's petition was denied and an environmental groups' petition was granted in part and denied in part as "in the area" in a final rule unambiguously referred to baseline emissions within the nonattainment area, and the EPA failed introduce adequate anti-backsliding provisions in that rule.

[557] Some scholars would argue for federal environmental rights, but the overwhelming legal authority seems to conclude that the CAA and the CWA do not create a right to clean air or to clean water. They seem to create qualified (limited) rights of citizens to seek legal remedies if the laws' substantive standards and/or procedural requirements are not being followed by a government agency or (in limited circumstances) by a regulated polluter (e.g., business, individual, organisation, etc.). Your lack of sources about these government government-created (by congress) non-fundamental rights indicates that you haven't yet achieved understanding of environmental rights in the US, which are nuanced, technical, and limited. Arguably, procedural rights (e.g., NEPA) are much greater in US.

to ensure their citizens that public authorities should respect their environmental claims and entitlements. In fact, environmental constitutionalism tries to examine, in some cases, the development, implementation and effectiveness[558] of incorporating environmental rights, procedures, and policies into disparate constitutions. Owing its genesis to the 1948 Universal Declaration on Human Rights, and 1966's covenants on Civil and Political and Economic, Social and Cultural Rights, it was received by 1972's Stockholm Convention on the Human Environment, which is seen as the global impetus for the exponential growth of international, regional and national environmental law regimes, including rights related issues.[559]

In addition to fundamental constitutional law, non-constitutional legislation, or statutes in civil law tradition, may also provide environmental rights, especially regarding procedural issues, such as information, transparency, or participation.[560]

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[558] Some literature (namely French) gives importance to the difference between effectivity and effectiveness (*effectivité et l'efficacité*). Effectivity would be a status: the concrete and material effect of the legal rule evaluated in the field. Effectiveness therefore measures whether the legal standard has achieved its objective (s). Effectivity can be considered as a necessary but not sufficient condition of effectiveness. See Michel Prieur, *Les indicateurs juridiques: Outils d'évaluation de l'effectivité du droit de l'environnement* (Québec, IFDD, 2018), 11-12 <https://www.ifdd.francophonie.org/ressources/ressources-pub-desc.php?id=733> (accessed on 2020.01.05); and Yann Leroy, "La notion d'effectivité du droit," *Droit et Société*, No. 79 (2011), 715-732.

[559] Erin Daly et al, "Introduction to Environmental Constitutionalism," in Erin Daly, Louis Kotze, James May, and Caiphas Soyapi (eds.), *New Frontiers in Environmental Constitutionalism* (UNEP, 2017), 30-33.

[560] See Pedro Machete, "Rapports: Portugal: Access to Information in the Portuguese Legal System," *European Public Law*, Vol. 6, Issue 2 (2000), 183-192; Oluf Jørgensen, *Access to Information in the Nordic Countries: A comparison of the laws of Sweden, Finland, Denmark, Norway and Iceland and international rules* (Göteborg: Nordicom, 2014); and Hermann-Josef Blanke and Ricardo Perlingeiro, *The Right of Access to Public Information: An International Comparative Legal Survey* (Berlin: Springer, 2018).

In the case of US state law, and although federal constitutional law does not expressly recognise environmental rights, some state constitutions provide protection to those rights and some cases where it happens will be analysed further in this dissertation. Other than constitutions, also statutory law and case law may recognise environmental rights. However, both sources of law naturally depend on the willpower of the legislatures and the usual rules of judicial decision and adjudication in common-law systems.[561]

4.4. Local law and governance

Both in EU or US, local public authorities may recognise claims or entitlements to citizens regarding the protection of environment. Usually, these rights have more to do with issues related to information, open access, public consultation or participatory rights.[562] Although these rights could be understood as minor or more procedural, they can assume high importance in what respects the day-to-day life of citizens and local governance, once they are connected to issues that imply more proximity and more relation with the territories and communities.

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[561] See Evan J. Ringquist, *Environmental Protection at the State Level: Politics and Progress in Controlling Pollution* (Abingdon: Routledge, 1993); Mary E. Cusack, "Judicial Interpretation of State Constitutional Rights to a Healthful Environment," *Boston College Environmental Affairs Law Review*, Vol. 20, Issue 1 (1993), 173-201; Meghan A. Farley, "Did the Court Dig too Deep?: An Analysis of the Pennsylvania Supreme Court's Decision in Robinson Twp., Washington County v. Commonwealth of Pennsylvania, el al.," *Villanova Environmental Law Journal*, Vol. 26, Issue 2 (2015), 325-362; and Devra R. Cohen, "Forever Evergreen: Amending the Washington State Constitution for a Healthy Environment," *Washington Law Review*, Vol. 90 (2015), 349-404.

[562] See the example of Seattle Municipal Code, at 25.05.500, on notice and public availability of environmental documents, consultation and comment, and public hearings and meetings <https://library.municode.com/wa/seattle/codes/municipal_code?nodeId=TIT25ENPRHIPR_CH25.05ENPOPR_SUBCHAPTER_VCO&showChanges=true> (accessed on 2020.01.05). See also Lisbon Open Data Portal (Lisboa Aberta) <http://lisboaaberta.cm-lisboa.pt/index.php/pt/> (accessed on 2020.01.05).

Policy and governance at a local level can, thus, play a relevant role in this area and local law could open space for promoting it.

5. Examples of environmental rights in different jurisdictions: EU and US

As contextualising examples or illustrations of the reality or the status of environmental rights, resilience justice, and adaptive law, the following pages intend to describe a general view about the provisions and the application of environmental law within the territories and legal systems of the EU and the US.

Within the scenarios of the EU, the three illustrative examples of Denmark, Hungary, and Portugal, are to be described. On the other hand, under the US federal reality, state environmental law in Florida, Pennsylvania, and Washington are analysed.

5.1. EU law

Environmental law and regulation within the EU are, as in other legal systems around the world, relatively recent realities, being only some decades old. It is relevant, at this point, to explain that EU environmental law is today spread along different sources of law which usually characterise EU law. From the original or following treaties to the CFREU, directives, regulations, or other legal sources, environmental law has a relevant and transversal function in EU law,

which has been strongly influencing the laws of Member-States.[563] Even more than influencing, it is effectively applied.[564]

According to Article 17(1) of the Treaty on European Union (TEU), it is the European Commission's attribution to ensure that both the TEU, the Treaty on the Functioning of the European Union (TFEU), and measures adopted pursuant to them are accurately applied. Actually, the Commission is considered the "Guardian of the Treaties" and has the major task of monitoring over 200 environmental legal acts to monitor in all Member States.[565] The mentioned legislative measures cover all environmental sectors, including as water, air, nature, waste, noise, chemicals, and other areas dealing with issues such as environmental impact assessment, access to environmental information, public participation in environmental decision-making and liability for environmental damage.[566]

5.1.1. Treaties

The general definition of objectives of EU environmental policy is laid down in Articles 3 TEU and 191(1) TFEU. Moreover, Article 11 TFEU provides that

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[563] Hubert Heinelt et al, *European Union Environment Policy and New Forms of Governance: A study of the implementation of the environmental impact assessment directive and the eco-management and audit scheme regulation in three member states* (Abingdon: Routledge, 2001); Barbara Hicks, "Setting Agendas and Shaping Activism: EU Influence on Central and Eastern European Environmental Movements," *Environmental Politics*, Vol. 13, Issue 1 (2004), 216-233; Brian Jack, "Enforcing Member State Compliance with EU Environmental Law: A Critical Evaluation of the Use of Financial Penalties," *Journal of Environmental Law*, Vol. 23, Issue 1 (2011), 73-95; and Fabrizio De Francesco, "Diffusion of Regulatory Impact Analysis Among OECD and EU Member States," *Comparative Political Studies*, Vol. 45, Issue 10 (2012), 1277-1305.

[564] On this issue, see Francisco Pereira Coutinho, "European Union Law in Portuguese Courts: An Appraisal of the First Twenty-five Years after the Accession," *Yearbook of European Law*, Vol. 36 (2017), 358-390.

[565] See the European Commission's website, on Environmental Legal Enforcement <http://ec.europa.eu/environment/legal/law/index.htm> (accessed on 2020.01.05).

[566] Ludwig Krämer, *EU Environmental Law*, Eight Edition (London: Sweet & Maxwell, 2016), 5-6.

environmental protection requirements must be integrated into the definition and implementation of the EU policies and activities, in particular with a view to promoting sustainable development.

As it is provided in the treaties, the Member States do not have a large margin in area of environmental policy outside EU competence. Articles 191[567] and 192[568]

[567] "Article 191 (ex-Article 174 TEC) – 1. Union policy on the environment shall contribute to pursuit of the following objectives:
- preserving, protecting and improving the quality of the environment,
- protecting human health,
- prudent and rational utilisation of natural resources,
- promoting measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change.
2. Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.
In this context, harmonisation measures answering environmental protection requirements shall include, where appropriate, a safeguard clause allowing Member States to take provisional measures, for non-economic environmental reasons, subject to a procedure of inspection by the Union.
3. In preparing its policy on the environment, the Union shall take account of:
- available scientific and technical data,
- environmental conditions in the various regions of the Union,
- the potential benefits and costs of action or lack of action,
- the economic and social development of the Union as a whole and the balanced development of its regions.
4. Within their respective spheres of competence, the Union and the Member States shall cooperate with third countries and with the competent international organisations. The arrangements for Union cooperation may be the subject of agreements between the Union and the third parties concerned.
The previous subparagraph shall be without prejudice to Member States' competence to negotiate in international bodies and to conclude international agreements."

[568] "Article 192 (ex-Article 175 TEC) - 1. The European Parliament and the Council, acting in accordance with the ordinary legislative procedure and after consulting the Economic and Social Committee and the Committee of the Regions, shall decide what action is to be taken by the Union in order to achieve the objectives referred to in Article 191.
2. By way of derogation from the decision-making procedure provided for in paragraph 1 and without prejudice to Article 114, the Council acting unanimously in accordance with a special

TFEU remain the most relevant provisions for environmental action. However, measures on agricultural aspects of environmental protection are usually based on article 43 TFEU,[569] and initiatives in the areas of environmental aspects of transport can be justified by article 91 TFEU.[570] The legal basis is relevant for the

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legislative procedure and after consulting the European Parliament, the Economic and Social Committee and the Committee of the Regions, shall adopt:
(a) provisions primarily of a fiscal nature;
(b) measures affecting:
- town and country planning,
- quantitative management of water resources or affecting, directly or indirectly, the availability of those resources,
- land use, with the exception of waste management;
(c) measures significantly affecting a Member State's choice between different energy sources and the general structure of its energy supply.
The Council, acting unanimously on a proposal from the Commission and after consulting the European Parliament, the Economic and Social Committee and the Committee of the Regions, may make the ordinary legislative procedure applicable to the matters referred to in the first subparagraph.
3. General action programmes setting out priority objectives to be attained shall be adopted by the European Parliament and the Council, acting in accordance with the ordinary legislative procedure and after consulting the Economic and Social Committee and the Committee of the Regions.
The measures necessary for the implementation of these programmes shall be adopted under the terms of paragraph 1 or 2, as the case may be.
4. Without prejudice to certain measures adopted by the Union, the Member States shall finance and implement the environment policy.
5. Without prejudice to the principle that the polluter should pay, if a measure based on the provisions of paragraph 1 involves costs deemed disproportionate for the public authorities of a Member State, such measure shall lay down appropriate provisions in the form of:
- temporary derogations, and/or
- financial support from the Cohesion Fund set up pursuant to Article 177."

[569] An example of that was the Council Directive 91/414/EEC <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A31991L0414> (accessed on 2020.01.06) concerning the placing of plant protection products on the market, which was repealed by Regulation (EC) No. 1107/2009 of the European Parliament and of the Council <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32009R1107> (accessed on 2020.01.06).

[570] An example of this was the Directive 1999/62/EC of the European Parliament and of the Council of 17 June 1999 on the charging of heavy goods vehicles for the use of certain infrastructures <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31999L0062> (accessed on 2020.01.06).

elaboration of the proposal, the participation of different institutions, as well as the intensity of this participation.[571] Even the rights for Member States are different from one provision to another.[572]

Whilst, provisions such as article 34 TFEU are directly applicable, expressly establishing that "quantitative restrictions on imports and all measures having equivalent effect shall (…) be prohibited between member States," the same does not happen with articles 191 or 192 TFEU, which solely state that pollution is prohibited or that the polluter shall pay for pollution These articles specifically dedicated to the environment therefore need to be operationalised by secondary legislation.[573]

Other relevant provisions where EU environmental actions can be based are article 114 TFEU[574], on the establishment and the functioning of the internal market, article 43 TFEU, on agriculture and fisheries, article 91 TFEU regarding transport, article 207 TFEU on commerce, and article 182 TFEU on measures concerning research and development. In the past, before the provision of a specific chapter on energy policy in the EC Treaty, environmental measures in the energy sector were frequently based on article 192 TFEU.[575] In this sense, article 352 TFEU was used, as a "flexibility clause" to extend the competences of the Community.[576] A new provision was then introduced by the Lisbon Treaty

[571] See articles 293 and 294 TFEU.

[572] Ludwig Krämer, *EU Environmental Law* (2016), 5-6.

[573] Ludwig Krämer, *EU Environmental Law* (2016), 6.

[574] "Article 114 (ex-Article 95 TEC) – 3. The Commission, in its proposals (…) concerning health, safety, environmental protection and consumer protection, will take as a base a high level of protection, taking account in particular of any new development based on scientific facts. Within their respective powers, the European Parliament and the Council will also seek to achieve this objective."

[575] An example of that was the Directive 2001/77 of the European Parliament and the Council on the promotion of electricity produced from renewable energy sources in the internal electricity market <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32001L0077> (accessed on 2020.01.06).

[576] Kaczorowska-Ireland, *European Union Law* (2016), 190-191.

(article 194 TFEU), which is now being used for energy-related environmental measures.[577]

In accordance with the article 216(2) TFEU, international conventions to which the EU has adhered are also part of EU law.[578] Actually, these legal instruments ranking below the primary law of the TFEU, but above secondary legislation, prevailing over possibly conflicting environmental directives or regulations.[579] For the EU Court of Justice (EUCJ) to allow a provision of an international environmental convention to be relied on in court, it must have direct effect.[580] If it is not the case, national courts are requested to do their best in order to give full effect to such a provision in national law (*effet utile*).[581] The EUCJ has not yet

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[577] See the example of the Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0027> (accessed on 2020.01.06).

[578] Article 216(2) TFEU now provides that "[a]greements concluded by the Union are binding upon the institutions of the Union and on its Member States" and this is a basis for the EU to be part of "mixed" international conventions.

[579] See *IATA and ELFAA* (C-344/04) [2006] E.C.R. I-403, ECLI:EU:C:2006:10 <http://curia.europa.eu/juris/showPdf.jsf?text=&docid=57285&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=7448389> (accessed on 2020.01.10), at 35: "Article 300(7) EC [now article 216(2) of the TFEU] provides that 'agreements concluded under the conditions set out in this Article shall be binding on the institutions of the Community and the Member States'. In accordance with the court's case-law, those agreements prevail over provisions of secondary Community legislation."

[580] *Council and European Parliament v Milieudefensie and Stichting Stop Luchtverontreiniging Utrecht*, (joined cases C-401/12P and C-402/12P), ECLI:EU:C:2015:4 <http://curia.europa.eu/juris/document/document.jsf?text=&docid=161324&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=7448345> (accessed on 2020.01.10); *Council and Commission v Stichting Natuur en Milieu and Pesticide Action Network Europe* (joined cases C-404/12P and C-405/12P) ECLI:EU:C:2015:5 <http://curia.europa.eu/juris/document/document.jsf?text=&docid=161323&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=7448491> (accessed on 2020.01.10).

[581] *Lesoochranárske zoskupenie* C-240/09, ECLI:EU:C:2011:125 <http://curia.europa.eu/juris/document/document.jsf?text=&docid=80235&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=7448585> (accessed on 2020.01.10), at 50: "it is for the national court, in order to ensure effective judicial protection in the fields covered by EU environmental law, to interpret its national law in a way which, to the fullest extent possible, is

accepted that it is under an obligation to apply the *effet utile* doctrine in such cases.[582]

With regard to environmental rights, until the Treaty of Lisbon entered into force in December 2009, Treaties did not contain a list of fundamental rights, or a right regarding the environment. The EU was initially characterised largely by its economic objective and constructed around fundamental freedoms, such as the movement of goods, services, persons, and capital, and the freedom of competition. Therefore, the market integration has dominated the secondary ancillary policies, such as social, consumer, and environmental policies.[583]

However, regarding environmental rights, Judge Weeramantry emphasised that:

> "The protection of the environment is (...) a vital part of contemporary human rights doctrine, for it is [an indispensable requirement] (...) for numerous human rights such as the right to health and the right to life itself."[584]

In effect, the quality of the human environment has gone hand in hand with the historically basic human rights. The first development withing EU law was in Article 6(3) TEU, which provides that fundamental rights result from constitutional traditions common to Member States. Given that a large number of Member State constitutions have been enshrining a constitutional right to

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consistent with the objectives laid down in Article 9(3) of the Aarhus Convention"; see in the same way *Boxus and Others* (joined cases C-128/09 to C-131/09 and C-135/09) [2011] E.C.R. I-9711. ECLI:EU:C:2011:667 <http://curia.europa.eu/juris/document/document.jsf?text=&docid=111403&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=7449448> (accessed on 2020.01.10).

[582] Krämer, *EU Environmental Law* (2016), 6.

[583] Miguel Poiares Maduro, "The Double Constitutional Life of the Charter of Fundamental Rights of the EU," in T. Hervey, and J. Kenner (eds), *Economic and Social Rights under the EU Charter of Fundamental Rights* (Oxford: Hart Publishing, 2003), 285.

[584] *Gabčíkovo-Nagymaros Project*, Separate Opinion of Judge Weeramantry, para. A(b)) <https://www.icj-cij.org/files/case-related/92/092-19970925-JUD-01-03-EN.pdf> (accessed on 2020.01.06).

environmental protection, this was an important influence for the recognition of a right. It is usually provided either as a State duty to preserve the environment[585] or as a substantive right to environmental protection. The diverse formulations used to assert such a fundamental right are the following ones: "healthy environment,"[586] "balanced and health-friendly environment,"[587] "favourable environment,"[588] or "environment suitable for the development of the person."[589]

The value of these rights stand "above a mere policy choice that may be modified or discarded at will"[590] and, as constitutional rights, they are given precedence over inferior legal and executive norms. These constitutional provisions do not specifically fit neatly into a single category,[591] as they depart significantly from the "hand-off" attitude[592] that underpins first-generation human rights (i.e. civil and political rights). Therefore, they straddle the second generation (economic, social, and cultural rights) and third generation of human rights (solidarity rights).[593]

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[585] Under other constitutions that do not mention the existence of an individual right, the State is under a duty to adopt measures to protect the environment. See Estonian Constitution, Art. 34; Greek Constitution, Art. 24; Italian Constitution, Art. 117; Portuguese Constitution, Art. 66; Latvian Constitution, Art. 115; Lithuanian Constitution, Art. 53; Luxembourg Constitution, Art. 11bis; or the Romanian Constitution, Art. 135(2)(e).

[586] Belgian Constitution, Art. 23; Bulgarian Constitution, Art. 55; Croatian Constitution, Art. 69; Hungarian Constitution, Art. 18; Slovenian Constitution, Art. 72; Dutch Constitution, Art. 21; Finnish Constitution, Sct. 20.

[587] French Constitutional Charter for the Environment, Art. 1.

[588] Slovakian Constitution, Art. 44(1).

[589] Spanish Constitution, Art. 45.

[590] Dinah Shelton, "Introduction," in Dinah Shelton (ed.), *Human Rights and the Environment*, Vol. I (Cheltenham: Edward Elgar, 2011), x.

[591] Alan Boyle, "Human Rights or Environmental Rights? A Reassessment," *Fordham Environmental Law Review*, Vol. 18, No.3 (2006), 471.

[592] Joseph L. Sax, "The Search for Environmental Rights," *Journal of Land Use & Environmental Law*, Vol. 6 (1990), 94.

[593] It should be noted that Art. 37 EUCFR is included under the Chapter "Solidarity."

A second important development in EU environmental rights was the recognition of the text of the CFREU with the status of Treaty law, since December 2009 in accordance with Article 6(1) TEU. For two decades, the ECtHR had carved environmental duties from a number of rights enshrined in the ECHR, which, according with Article 6(3) TEU, are "general principles of the Union's law."

Another relevant development was the United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters. This mixed agreement, was adopted on 25 June 1998 in Aarhus (Aarhus Convention),[594] did not explicitly enshrine that any environmental right exists *per se*,[595] but paved the way for the use of various procedural rights and to the objective of an adequate environment for every person.[596] [597]

5.1.2. Statutory law and policy

With respect to statutory legislation and policies within the EU, some examples of recognising environmental rights may be presented, even if in some cases they are not expressly determined.

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[594] Council Decision 2005/370/EC on the conclusion, on behalf of the European Community, of the Convention on access to information, public participation in decision-making and access to justice in environmental matters <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32005D0370> (accessed on 2020.01.05).

[595] The preamble to the Convention proclaims that every person has the right to live in a healthy environment, a right that relates to the obligation to protect the environment. Pursuant to Art. 1, its goal is to protect the right of every person of present and future generations to live in an environment adequate for health and well-being.

[596] Pedersen, "European Environmental Human Rights and Environmental Rights" (2008), 100.

[597] For all, see Nicolas de Sadeleer, *EU Environmental Law and the Internal Market* (Oxford: Oxford University Press, 2014), 95-97.

One reference that could be made is to the Environmental Impact Assessment (EIA) Directive, which is in force since 1985. The EU EIA legal framework was approved by the Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment[598], being applied to a wide range of defined public and private projects, which have been defined in its annexes (I and II). This directive was amended three times, in 1997, in 2003 and in 2009, which were then codified by Directive 2011/92/EU of 13 December 2011 and amended later by Directive 2014/52/EU of 16 April 2014.[599]

In the different versions of the EIA directive throughout the years is possible to find clear references to information and consultation, such as Article 6 of the Directive 85/337/EEC[600], which provides public consultation, and, more recently,

[598] Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31985L0337> (accessed on 2020.01.05).

[599] Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

[600] This article specifically sets as follows:

"1. Member States shall take the measures necessary to ensure that the authorities likely to be concerned by the project by reason of their specific environmental responsibilities are given an opportunity to express their opinion on the request for development consent. Member States shall designate the authorities to be consulted for this purpose in general terms or in each case when the request for consent is made. The information gathered pursuant to Article 5 shall be forwarded to these authorities. Detailed arrangements for consultation shall be laid down by the Member States.

2. Member States shall ensure that:

- any request for development consent and any information gathered pursuant to Article 5 are made available to the public,
- the public concerned is given the opportunity to express an opinion before the project is initiated.

3. The detailed arrangements for such information and consultation shall be determined by the Member States, which may in particular, depending on the particular characteristics of the projects or sites concerned:

- determine the public concerned,
- specify the places where the information can be consulted,

Article 9, paragraph 1 (b), approved by Directive 2014/52/EU, which sets that the "decision to grant or refuse development consent" must be "promptly" informed to the public, taking into account: "the main reasons and considerations on which the decision is based, including information about the public participation process."[601]

The same spirit was followed for the EU Strategic Environmental Assessment (SEA) legal framework, approved by Directive 2001/42/EC of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment[602], which application usually pursues an iteration adapted to the more common EIA process. In the SEA Directive is possible to find, in its recital (15), the provision that:

> "[i]n order to contribute to more transparent decision making and with the aim of ensuring that the information supplied for the assessment is comprehensive and reliable, it is necessary to provide that (…) the public [is] to be consulted during the assessment of plans and programmes, and that appropriate time frames are set, allowing sufficient time for consultations, including the expression of opinion."

- specify the way in which the public may be informed, for example by bill-posting within a certain radius, publication in local newspapers, organization of exhibitions with plans, drawings, tables, graphs, models,
- determine the manner in which the public is to be consulted, for example, by written submissions, by public enquiry,
- fix appropriate time limits for the various stages of the procedure in order to ensure that a decision is taken within a reasonable period."

[601] Regarding this issue, the inclusion of recital (36) in the Directive 2014/52/EU should also be emphasised, having explained that the stimulation of efficient "time-frames [in decision-making] should, under no circumstances, compromise the achievement of high standards for the protection of the environment, particularly those resulting from Union legislation on the environment other than this Directive, and *effective public participation and access to justice*" [highlighted by the author].

[602] Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32001L0042> (accessed on 2020.01.05).

Actually, the SEA Directive even includes "the public" in its definitions' provision, clarifying that it "shall mean one or more natural or legal persons and, in accordance with national legislation or practice, their associations, organisations or groups" [cf. Article 2(d)]. The draft plans or programmes and environmental reports shall be made available to the authorities and also the public, in accordance with Article 6(1).

Another example of express legal provisions on public participation is the EU Industrial Emissions (IE) framework, which was approved Directive 2010/75/EU of 24 November 2010 on industrial emissions[603], modifying the previous regime on integrated pollution prevention and control (Directive 2008/1/EC of 15 January 2008). The IE Directive starts, in its recital (27)[604], to mention the importance of complying with the Aarhus Convention, in order to protect the "right to live in an environment which is adequate for personal health and well-being." Additionally, it sets a specific article dedicated to the "[a]ccess to information and public participation in the permit procedure" (Article 24), as well as an annex concerning "Public participation in decision-making" (Annex IV).

These are only some examples of how statutory legislation has been (more implicitly than expressly) recognising a number of environmental rights. And in

[603] Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) <https://eur-lex.europa.eu/eli/dir/2010/75/oj#ntr15-L_2010334EN.01001701-E0015> (accessed on 2020.01.05).

[604] Recital (27) provides that: "[i]n accordance with the Århus Convention on access to information, public participation in decision-making and access to justice in environmental matters (15), effective public participation in decision-making is necessary to enable the public to express, and the decision-maker to take account of, opinions and concerns which may be relevant to those decisions, thereby increasing the accountability and transparency of the decision-making process and contributing to public awareness of environmental issues and support for the decisions taken. Members of the public concerned should have access to justice in order to contribute to the protection of the right to live in an environment which is adequate for personal health and well-being."

the case of directives, it should be highlighted that their provisions need to be transposed by Member States to their respective legislation, in accordance with Article 288 TFEU.[605]

In addition to statutory law, EU environmental and urban policies also play a relevant role in the protection of environmental rights, even if in a more aspirational way. The legal basis for environmental policies are Articles 11 and 191 to 193 of the TFEU. According to these provisions, the EU is competent to act in all areas of environment policy, such as air and water pollution, waste management and climate change. The scope for action is limited by the principle of subsidiarity and the requirement for unanimity in the Council in the fields of fiscal matters, town and country planning, land use, quantitative water resource management, choice of energy sources and structure of energy supply (Article 192).

Finally, another legislative act with large importance for environmental policies, planning and urban management should be mentioned. It was Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE).[606] As the European Commission explains, this directive and its framework intended to create an efficient way to share European spatial

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[605] "Article 288 (ex-Article 249 TEC) – To exercise the Union's competences, the institutions shall adopt regulations, directives, decisions, recommendations and opinions.
A regulation shall have general application. It shall be binding in its entirety and directly applicable in all Member States.
A directive shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods.
A decision shall be binding in its entirety. A decision which specifies those to whom it is addressed shall be binding only on them.
Recommendations and opinions shall have no binding force."

[606] Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32007L0002> (accessed on 2020.01.05).

data, in order for making the right decisions about our environment and well-being in a timely manner.[607] Its main purpose, according to Article 1(1), is to lay down general rules aimed at the establishment of infrastructure for spatial information in the EU, for the purposes of environmental policies and policies or activities which may have an impact on the environment.[608] An extremely important element of this framework is the implementation of rules for the interoperability and harmonisation of spatial data sets and services, which will certainly improve the relations and contact between the State and citizens (and also businesses), but also within public entities.[609] Directive INSPIRE was, therefore, a contribution to facilitate participation and consultation of different stakeholders, given that it has been promoting more connected, informed and transparent systems.[610]

The following Table 6 describes a general overview of the most relevant moments for EU environmental law and policy.

Table 6: Some relevant moments for EU Environmental Law and Policy

1957 – EEC or Common Market, Treaty of Rome with no reference to the environment 1967 – First Common Market Directive on the labelling of dangerous products 1972 – Stockholm Conference – catalyst for the first Environmental Action Program for the Environment 1973 – First Programme of Action of the EEC for the Environment. Accession of the United Kingdom. 1973/86 – Developments in Community environmental law in the water, waste and later air pollution sectors.

[607] See the European Commission infographic "INSPIRE – an efficient way to share European spatial data!" (2017) <https://inspire.ec.europa.eu/file/2834/download?token=sVeAlhcn> (accessed on 2020.01.05).

[608] For a more complete overview about the whole infrastructure, see the INSPIRE webpage <https://inspire.ec.europa.eu/> (accessed on 2020.01.05).

[609] On this issue, see Article 7(1) of Directive INSPIRE.

[610] Sean Whittaker, "The Right of Access to Environmental Information and Legal Transplant Theory: Lessons from London and Beijing," *Transnational Environmental Law*, Vol. 6, Issue 3 (2017), 509-530.

1980 – Court of Justice concludes that common market measures can pursue environmental objectives
1985 – Court of Justice concludes that environmental protection is "one of the essential objectives of the Community"
1987 – Single European Act. An Environmental Title is included in the EEC Treaty. Increased emphasis on implementing environmental measures following the accident in Seveso, Italy.
1987/93 – Rapid extension of environmental legislation in order to implement the Single European Act.
1988 – Court of Justice concludes that environmental protection is a mandatory requirement in the EEC.
1989 – Creation of DG Env in the EEC Commission.
1990 – Creation of the European Environment Agency (starts 1993)
1992 – 5th Environmental Action Programme: shared responsibility and more flexibility in legislation
1993 – EEC becomes EC with the Treaty of Maastricht, which includes the precautionary principle in the title dedicated to the Environment. The EU is born, but the EC, ECSC, Euratom).
1997 – Treaty of Amsterdam. Promoting sustainable development becomes an objective of the EC. Requires environmental protection to be integrated into other Community policies.
1998 – "Cardiff Process", promoting the integration of environmental policies.
2001 – EC Sustainable Development Strategy (renewed in 2006 and 2009).
2009 – End of the EC. There is only the EU (Treaty of Lisbon).
2010 – Creation of DG Clima in the EU Commission.
2013 – 7th Environment Action Programme
2015 – EU signs and ratifies the Paris Agreement on Climate Change
2019 – European Green Deal sets out how to make Europe the first climate-neutral continent by 2050[611]

5.1.3. Case law

With regard to the position of the Court of Justice of the European Union (CJEU), its review in the past used to be more confined to vested individual interests and matters of subjective concern. However, it is now possible to see a trend towards public interest litigation and judicial enforcement – including that of merely "objective" environmental laws – with non-governmental organisations (NGOs) playing an increasing role as litigators and trustees of the environment. And this is happening due to the importance that is more and more been given to the need

[611] See the European Green Deal (Brussels, 11.12.2019 COM(2019) 640 final) on the Commission's website <https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf> (accessed on 2020.02.10) and the European Parliament resolution of 15 January 2020 on the European Green Deal (2019/2956(RSP)) <https://www.europarl.europa.eu/doceo/document/TA-9-2020-0005_EN.html> (accessed on 2020.02.10).

of a stable climate, the protection of biodiversity, genetic resources, water quality and air quality.

With regard to the position of the CJEU, its review in the past used to be more confined to vested individual interests and matters of subjective concern. However, it is now possible to see a trend towards public interest litigation and judicial enforcement – including that of merely "objective" environmental laws – with non-governmental organisations (NGOs) playing an increasing role as litigators and trustees of the environment.

Through the ratification of the Aarhus Convention in 2005,[612] the EU demonstrated to commit itself to guaranteeing access to justice in environmental matters, intending to be a frontrunner in terms of procedural environmental rights. Then, to ensure compliance with the obligations under the Aarhus Convention, the European Parliament and Council also approved Regulation (EC) 1367/2006 on the application of the provisions of the Aarhus Convention to Community institutions and bodies ("Aarhus Regulation").[613]

In *Stichting Natuur en Milieu* and *Vereniging Milieudefensie*, the General Court invalidated two decisions of the European Commission where a restrictive approach to the Aarhus Regulation had been applied. It referred to the EU's obligations under Article 9(3) of the Aarhus Convention. Nevertheless, after appeal, the CJEU concluded to reject an Aarhus-based discourse and avoided a

[612] Council Decision 2005/370/EC of 17 February 2005 on the conclusion on behalf of the European Community, of the Convention on access to information, public participation in decision-making and access to justice in environmental matters.

[613] Hendrik Schoukens, "Access to Justice in Environmental Cases after the Rulings of the Court of Justice of 13 January 2015: Kafka Revisited?," *Utrecht Journal of International and European Law*, Vol. 31, No. 81, (2015), 46-67 <https://utrechtjournal.org/articles/10.5334/ujiel.di/> (accessed on 2019.10.09).

legality review of the Aarhus Regulation in the light of the international obligations of the EU.[614]

This means that developments are still progressing, with a lot of open questions as to how far they will go and what consequences they entail for developers, investors, litigators, NGOs, administrations and judges. The process of developing access to environmental justice is, therefore, still ongoing and far from being completed.[615]

In fact, when the first provisions influenced by the Aarhus Convention were adopted in 2003[616], they were received with considerable reluctance among national authorities and courts. Actually, most of the leading cases in this matter have been raised in Germany, given that the Member State is known for its stringent observance of the *Schutznormtheorie* (protective norm approach), according to which standing is only granted to applicants who can reasonably claim the violation of a law that is protecting their individual interest. And, curiously, Germany attempted to transpose Directive 2003/35 in 2006 its first edition of a "Law on actions in environmental matters" (*Umweltrechtsbehelfsgesetz*). This new act introduced NGO action with regard to all permit decisions subject to EIA as demanded by the Directive. However,

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[614] Joined cases C-404/12 P and C-405/12 P *Council and Others v Stichting Natuur en Milieu and Milieu and Pesticide Action Network Europe* (CJEU, 13 January 2015) ECLI:EU:C:2015:5; Joined cases C-401/12 P and C-403/12 P *Council and Others v Vereniging Milieudefensie and Stichting Stop Luchtverontreiniging Utrecht* (CJEU, 13 January 2015) ECLI:EU:C:2015:4.

[615] Jerzy Jendrośka et al, "The Courts as Guardians of the Environment – New Developments in Access to Justice and Environmental Litigation," ICLG to: Environment & Climate Change Law 2019 (London: Global Legal Group, 2019) <https://iclg.com/practice-areas/environment-and-climate-change-laws-and-regulations/2-the-courts-as-guardians-of-the-environment-new-developments-in-access-to-justice-and-environmental-litigation> (accessed on 2020.01.05).

[616] Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information <https://eur-lex.europa.eu/eli/dir/2003/4/oj> (accessed on 2020.01.06) and Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation (the first and second "pillars" of the Aarhus Convention).

NGOs could effectively only bring an action if – and as far as – individual rights were affected, and they were not permitted standing with regard to "objective" environmental laws.

Therefore, only in 2011 this fundamental restriction was turned down by the CJEU in *Trianel Case*.[617] German law was then revised accordingly, although maintaining some major restrictions on the access to courts from NGOs. The CJEU had to clarify later in *Altrip Case*[618] that Germany could not limit standing on EIA issues to cases where no environmental impact assessment was carried out at all, while not extending it to cases in which such an assessment was carried out but was irregular. As to the consequences of such procedural defects, the CJEU declared, however, that the national court may uphold the administrative decision if it is conceivable, having regard to the circumstances of the case, that the contested decision would not have been different without the procedural defect invoked by the applicant. Moreover, by that time, the EU Commission had also filed an infringement procedure against Germany, for disregarding the EU legislation. In this case, the Court followed the Commission's viewpoint and considered that German preclusion rules were not compatible with Article 11 of

[617] *Bund für Umwelt und Naturschutz Deutschland, Landesverband Nordrhein-Westfalen eV v Bezirksregierung Arnsberg* (C-115/09) (CJEU, 12 May 2011) ECLI:EU:C:2011:289 <http://curia.europa.eu/juris/document/document.jsf?text=&docid=82053&pageIndex=0&doclang=en&mode=lst&dir=&occ=first&part=1&cid=7448701> (accessed on 2020.01.10).

[618] *Gemeinde Altrip and Others v Land Rheinland-Pfalz* C-72/12 (CJEU, 7 November 2013) ECLI:EU:C:2013:712 <http://curia.europa.eu/juris/document/document.jsf?text=&docid=144212&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=7448788> (accessed on 2020.01.10).

the EIA Directive[619] and Article 25 of the Industrial Emissions (IE) Directive[620] – yet another victory for access to justice and public interest litigation.[621]

In the *Protect Case*[622], a referring Austrian Court asked the CJEU whether it should follow its previous adjudication that NGOs must be able to contest before a court a decision granting a permit for a water use that may be contrary to the obligation to prevent the deterioration of the status of bodies of water as set out in Article 4 of the EU's Water Framework Directive.[623] The CJEU deciding Chamber left the cautious position of the *Slovak Brown Bear Case*[624], and attributed direct effect to its wide interpretation of Article 9(3) of the Aarhus Convention as a measure for access to justice in the implementation of EU environmental law. The decision was based on the fundamental right to judicial protection enshrined by Article 47 of the CFREU. Nevertheless, the CJEU did not clarify whether this standing this is only for environmental NGOs and to what extent it can also be applied to individual "members of the public concerned" in the meaning of Article 9(3) and 2(5) of the Aarhus Convention.

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[619] The initial Directive 85/337/EEC and its three amendments have been codified by Directive 2011/92/EU of 13 December 2011, which was then amended in 2014 by Directive 2014/52/EU.

[620] Directive 2010/75/EU of the European Parliament and the Council on industrial emissions.

[621] *European Commission v Federal Republic of Germany* C-137/14 (CJEU, 15 October 2015) ECLI:EU:C:2015:683 <http://curia.europa.eu/juris/document/document.jsf?text=&docid=172723&pageIndex=0&doclang=EN&mode=req&dir=&occ=first&part=1&cid=7448834> (accessed on 2020.01.10).

[622] *Protect Natur-, Arten- und Landschaftschutz Umweltorganisation* C-664/15 (CJEU, 20 December 2017) ECLI:EU:C:2017:987 <http://curia.europa.eu/juris/document/document.jsf?text=&docid=198046&pageIndex=0&doclang=EN&mode=req&dir=&occ=first&part=1&cid=7448889> (accessed on 2020.01.10).

[623] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy <https://eur-lex.europa.eu/eli/dir/2000/60/oj> (accessed on 2020.01.05). Last amendment by Commission Directive 2014/101/EU of 30 October 2014 amending Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32014L0101> (accessed on 2020.01.05).

[624] *Lesoochranárske zoskupenie*.

Regarding this issue, in April 2018 the German Federal Administrative Court referred questions to the CJEU on the implications of the *Protect Case*, and again relating to the implementation of water quality standards. The referral was on whether not only environmental NGOs but also individuals can instigate judicial review regarding the implementation of EU water quality standards even though they do not specifically protect individual interests. The German Court took the view that this is not the case and that both the Aarhus Convention and EU law do not preclude national legislators from confining individual standing to laws protecting individual interests and – respectively – to applicants who reasonably claim that such a norm was breached.[625]

Until now, the Advocate General Hogan delivered an opinion on 12 November 2019, stating that Article 11(1)(b) of EIA Directive:

> "does not preclude a provision of national law according to which a claimant, who is not recognised as an environmental association, is entitled to apply for the annulment of a decision, act or omission which falls within that directive's scope due to a procedural defect only if he demonstrates that he has been deprived himself of at least one of the procedural guarantees provided for in that directive, in particular those provided for in Article 6."[626]

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[625] Jendrośk et al, "The Courts as Guardians of the Environment" (2019). Also see Stephen Stec, "Developing standards for Procedural Environmental rights through Practice," in Jerzy Jendroska and Magdalena Bar (eds.), *Procedural Environmental Rights: Principle X in Theory and Practice*, European Environmental Law Series, (Cambridge: Intersentia, 2018), 3-18; Svitlana Kravchenko, "The Aarhus Convention and Innovations in Compliance with Multilateral Environmental Agreements Compliance Mechanisms', *Colorado Journal of International Environmental Law and Policy*, Vol. 18, Issue 1 (2007), 1-50; Jonas Ebbesson, "Public Participation," in Daniel Bodansky et al (eds.), *The Oxford Handbook of International Environmental Law* (2007), 686; Jeremy Wates, "The Aarhus Convention: a Driving Force for Environmental Democracy," *Journal for European Environmental & Planning Law*, Vol. 2, Issue 1 (2005), 2-11.

[626] *Land Nordrhein-Westfalen* C-535/18 (Opinion of Advocate General Hogan, delivered on 12 November 2019) ECLI:EU:C:2019:957 <http://curia.europa.eu/juris/document/document.jsf?text=&docid=220538&pageIndex=0&doclang=en&mode=lst&dir=&occ=first&part=1&cid=7449084> (accessed on 2020.01.10), at 77 (1).

On the other hand, the Opinion argues that the same Article 11(1)(b):

> "precludes a provision of national law which makes an individual's right to seek the annulment of a decision, act or omission falling within that directive's scope conditional on having been deprived of the right of participation in the decision-making process on the ground that the procedural guarantees provided for in that directive are not considered to be substantive individual rights."[627]

However, in the end of its conclusions, the Opinion states that Article 4 of Water Framework Directive[628] must be interpreted as meaning that persons maintaining domestic wells for their private water supply or using a public water-supply network likely to be affected by the project concerned or otherwise specially affected by the project, are directly concerned by the risk of deterioration of the bodies of water concerned and may, as such, invoke Article 4 to bring judicial proceedings asserting breach of the prohibition of water deterioration.[629]

The CJEU has now an opportunity to take a fundamental decision for establishing in the EU a fully-fledged *actio popularis* for all environmental laws. Another option is to preserve the subjective rights approach, confining the assertion of "objective" laws to environmental NGOs and following *Plaumann doctrine*[630] of interpreting Article 263(4) TFEU in a strict way.[631]

These examples of judgements may play an important role as arguments for other groups or members of certain communities to claim for the protection of

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[627] *Land Nordrhein-Westfalen*, at 77 (1).

[628] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

[629] Directive 2000/60/EC., at 77 (4).

[630] See *Plaumann v Commission of the EEC* C-25/62 (CJEU, 15 July 1963) ECLI:EU:C:1963:17 <http://curia.europa.eu/juris/showPdf.jsf?text=&docid=87101&pageIndex=0&doclang=EN&mode=req&dir=&occ=first&part=1&cid=7449265> (accessed on 2020.01.10).

[631] Remaining it only to applicants who are individually and directly concerned by the contested act.

their environmental rights. And this can specifically apply for the examples of environmental injustices within the growing realities of cities.

5.2. Examples of EU domestic law

Within the territory of the EU the examples of Denmark, Hungary, and Portugal, chosen by the reasons and arguments previously presented, are to be analysed. Among the three mentioned Member States, not all of them constitutionally provide environmental rights and, in accordance with the findings of the European Commission, levels of protection can also be understood of being at different stages.[632]

5.2.1. Denmark

Environmental law in the Kingdom of Denmark has a strong international dimension due to membership of EU and participation in global and regional agreements. The inclusion of its legal reality in transnational law and more specifically EU environmental law has vertical and horizontal effects across jurisdictions binding national requirements for the Danish legislator and other Danish authorities. That represents a focal point for environmental legal frameworks in the country.[633]

The Danish reality is usually presented as a European reference in environmental law and policy, as it gives relevance to climate change, and special preferences for energy systems based on renewable sources. Most of Danes identify with

[632] See European Commission, Environmental Implementation Review, Policy findings and country reports <https://ec.europa.eu/environment/eir/country-reports/index_en.htm> (accessed on 2020.02.10).

[633] For all, see Ellen Margrethe Basse, *Environmental law in Denmark*, 2nd edition (Copenhagen: Djøf Forlag, 2015).

"being green" and prefer national and local policies that endorse sustainable technology and being self-sufficient. Denmark has ambitious low-carbon goals and is very often presented as a reference to other communities and countries seeking to decarbonise their own energy sectors and improve people's well-being.[634]

5.2.1.1. Constitution

The Constitutional Act of Denmark does not proclaim or provide a right to a healthy environment, or even other environmental right. In fact, the catalogue of rights in Danish constitutional law is reduced and very similar to those of common law tradition.[635]

Danish Constitution protects the traditional personal rights of speech, assembly, association and religious liberty. Section 71 provides that the "personal liberty shall be inviolable" (Subsection 1). Nevertheless, it is not possible to deduce any general or specific personal rights to an environment perspective.

Traditional Danish environmental law concerns the protection of the natural environment, and can be divided into sections across planning, conservation and pollution. Legislation regarding the protection of animals and fishing are not traditionally regarded as environmental law. However, acts relating to workers protection or working environment tend to be treated as a special kind of environmental law. In this sense, the right to an environment can be seen as a possibility to enjoy a high degree of natural state as possible in one's

[634] Benjamin K. Sovacool, and Pascale L. Blyth, "Energy and environmental attitudes in the green state of Denmark: Implications for energy democracy, low carbon transitions, and energy literacy," *Environmental Science & Policy*, Vol. 54 (December 2015), 304-315

[635] See the Constitutional Act of Denmark <https://www.thedanishparliament.dk/~/media/pdf/publikationer/english/my_constitutional_act_with_explanations.ashx> (accessed on 2020.01.05).

surroundings, without unnecessary disturbances deriving from mankind in the form of noise, dirt, polluted air or various disruptions. From a more philosophical perspective, the concept may be understood as a human degree of determination in the safeguarding of the possibilities of next generations of inheriting a pleasant environment and an inhabitable planet.[636]

In the Danish reality, one article of the Constitution is usually seen as of importance to environmental matters, which is Section 73. This provision lays down that "the right to property shall be inviolable". The importance and existence of a natural environment is naturally taken for granted, and this is probably why the Constitution did not provide legal norms to protect the environment and the relation of human being with it. That is the reason why there was no need to institute an explicit an obligation for the State to safeguard the environment. However, such an obligation is considered as implicitly existing, deduced from the theories on the role of the State.[637]

Regarding the specific protection of rights, the Danish implementation is understood as a complex matter that revolves around different variables. Human rights obligations derive from sources that have different status in Danish law, such as those under the Council of Europe, the EU, or the UN. The obligations can also be implemented in different ways, and different institutions are responsible to handle international human rights obligations in different ways.

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[636] Frants Dalgaard-Knudsen, "The Concept of Legal Rights to an Environment in Denmark," *Nordic Journal of International Law*, Vol. 57 (1988), 125-132.

[637] Dorthe Hedensted Lund, "Governance innovations for climate change adaptation in urban Denmark," *Journal of Environmental Policy & Planning*, Vol. 20, Issue 5 (2018), 632-644; Boyd, *The Environmental Rights Revolution* (2013), 273-277; Christoffer Green-Pedersen, Michelle Wolfe, "The Institutionalization of Environmental Attention in the United States and Denmark: Multiple- versus Single-Venue Systems," *Governance*, Vol. 22, Issue 4 (October 2009), 625-646; Katrine Højring, "The right to roam the countryside: law and reality concerning public access to the landscape in Denmark," *Landscape and Urban Planning*, Vol. 59, Issue 1 (2002), 29-41; Dalgaard-Knudsen, "The Concept of Legal Rights to an Environment in Denmark" (1988), 125-132.

There is, therefore, varying legislative implementation of human rights instruments and decisions. Moreover, the practice is developed by different institutions, such as the Refugee Board, the Equality Board, the Ombudsman, the National Human Rights Institution, the legislator and the judiciary. In the field of human rights implementation, Danish law is very pragmatic and goes a very long way to ensuring de facto implementation of Denmark's human rights obligation as they are reflected in international decisions, whether rendered vis-à-vis Denmark or other countries.[638]

5.2.1.2. Statutory law and policy

With regard to citizens' environmental rights in Danish statutory law, individuals and associations are by legislation conferred with rights as regards environmental cases. The rights are provided in general law and in legislation concerning specific issues. There are various kinds of rights, among which can be mentioned the rights to be heard, to participate in decision making, to receive information and to initiate legal actions.[639]

Danish environmental law has been covering a wide range of fields concerning the behaviour of humans towards their environmental surroundings. As an example, the Environmental Protection Act, approved by the Consolidated Act no. 879, 26 June 2010, and more recently replaced by Act no. 1189, 27 September 2016[640], is the main environmental law and sets out the fundamental environmental protection objectives, the means by which to meet these objectives

[638] Jonas Christoffersen, "Denmark: Implementation of International Human Rights Decisions in Denmark," in Stefan Kadelbach, Thilo Rensmann, and Eva Rieter (eds.), *Judging International Human Rights: Courts of General Jurisdiction as Human Rights Courts* (Cham: Springer, 2019), 439-451.

[639] For all, see Basse, *Environmental Law in Denmark* (2015).

[640] Danish Environmental Protection Act <http://extwprlegs1.fao.org/docs/pdf/den99369.pdf> (accessed on 2020.01.05).

and the administrative principles by which the agency operates. As a framework act, the Environmental Protection Act is therefore supplemented with guidelines and statutory orders drafted by the Danish Environmental Protection Agency and issued by the Minister of the Environment.[641]

In August 2013, the Danish Government adopted a Climate Policy Action Plan, "Towards a low carbon society" *(På vej mod et samfund uden drivhusgasser*), outlining policy principles for reducing GHG emissions by 40 per cent by 2020 in comparison to 1990 levels. This plan aims to contribute to the EU's target of an 80 to 95 per cent reduction of GHG emissions by 2050. In connection with the work on the climate plan, an inter-ministerial working group also created a catalogue of climate initiatives, describing about 80 possible climate measures.

The implementation of this Climate Policy Action Plan is assisted by a Climate Change Act, which was adopted in Parliament in June 2014 (Act No. 716 of 25 June 2014). This strategic framework intends to establish an overarching strategic framework to implement Denmark's Climate Policy and the transition to a low emission society. This also aims to establish transparency and public access to the status, direction and progress of Denmark's Climate Policy.[642] In order to achieve that, the Act provides the platform and resources to establish an independent

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[641] Håkun Djurhuus et al, "Environmental law and practice in Denmark: overview," *Practical Law – Environment* (2013/2014), 0-522-0619 <http://global.practicallaw.com/0-522-0619> (accessed on 2020.01.05)

[642] In accordance with the Danish Access to Public Administration Files Act (Act No. 572, 19 December 1985), amended in 2014 <https://danishbusinessauthority.dk/sites/default/files/AccessPublicAdministrationFilesAct.pdf > (accessed on 2020.01.05). See also Helle Krunke, "Freedom of information and Open Government in Denmark: Progress or deterioration?," *Revue Internationale des Gouvernements Ouverts*, Vol. 2 (2016), 65-76; and Pernille Boye Koch and Rikke Gottrup, "Reversible Transparency: A Study of the New Danish Access to Information Act," *European Public Law*, Vol. 25, Issue 2 (2019), 205-227; and GRECO, "Preventing corruption and promoting integrity in central governments (top executive functions) and law enforcement agencies: Evaluation Report – Denmark," GrecoEval5Rep(2018)8 (2019) <https://rm.coe.int/fifth-evaluation-round-preventing-corruption-and-promoting-integrity-i/168097203a> (accessed on 2020.01.05).

academic climate council, mandates the minister in charge to submit annual climate policy report to the parliament and a process for setting up of a 10-year national targets every 5 years.[643]

From the perspective of the Danish Environmental Protection Agency, sustainable development is about finding ways to develop environmental, financial, and social resources that meet the needs of the present without compromising the ability of future generations to meet their own needs.[644] In this sense, the Danish National Strategy for Sustainable Development (*Et bæredygtigt Danmark - Udvikling i Balance*) was published in October 2014 and is built on the following three pillars of sustainability: (i) financial sustainability; (ii) social sustainability; and (iii) green sustainability. The strategy brings forward 23 objectives in total within the three pillars of sustainability and adds an objective regarding the international dimension of sustainability.[645]

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[643] See Michal Nachmany, Sam Fankhauser, Jana Davidová, Nick Kingsmill, Tucker Landesman, Hitomi Roppongi, Philip Schleifer, Joana Setzer, Amelia Sharman, C. Stolle Singleton, Jayaraj Sundaresan and Terry Townshend, "Climate Change Legislation – Denmark," *The 2015 Global Climate Legislation Study: A Review of Climate Change Legislation in 99 Countries* (London: Grantham Institute, 2015) <http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/05/DENMARK.pdf> (accessed on 2020.01.05). Also see Danish Ministry of Energy, Utilities and Climate, Denmark's Seventh National Communication on Climate Change Under the United Nations Framework Convention on Climate Change and the Kyoto Protocol and Denmark's Third Biennial Report Under the United Nations Framework Convention on Climate Change (December 2017) <https://unfccc.int/sites/default/files/resource/8057126_Denmark-NC7-BR3-2-NC7-DNK-Denmarks-NC7-and-BR3_1January2018-12MB.pdf> (accessed on 2020.01.05).

[644] See the webpage of the Danish Environmental Protection Agency <https://eng.mst.dk/ > (accessed on 2020.01.08).

[645] The objectives can be read in full in the strategy (in Danish) <https://mst.dk/media/91913/et-baeredygtigt-danmark_udvikling-i-balance_web_a.pdf> and (in English) <https://eng.mst.dk/sustainability/sustainable-development-in-denmark/> (accessed on 2020.01.08).

5.2.2. Hungary

Hungary is considered to have an abundance of biodiversity across its vast grasslands, caves, rivers and wetlands. The country has made progress in decoupling its economic growth from the main environmental pressures. Nevertheless, intensive industrial and agricultural activities and an increase in road traffic have exacerbated environmental challenges. And, according to the European Commission, important institutional still issues impede more effective implementation of environmental laws and policies.[646]

Hungarian comprehensive environmental laws were strongly influenced by EU laws and policies. In fact, the constitution incorporated "green" values 2011, and the constitutional basis for environmental policy is strong. However, for the last years, no separate Ministry of Environment has existed, and environmental issues have largely been dealt with by the Ministry of Agriculture, in a department led by a deputy state secretary. National policies in the environmental area have been fragmented. Water management has rested with the Ministry of the Interior, and, the subnational environment authorities have become part of the government offices at the county level. This low importance attached to the protection of the environment has been conducting to problems of contamination of drinking water resources and the mismanagement of garbage sites have grown. The loss of trees in larger urban areas are still a reality, given that Construction activities have led to a serious "deforestation" in Budapest, as hundreds of big trees have been cut. Nuclear power is increasing, based on the extension of the Paks nuclear power plant, accepted by the European Commission in October 2017, and strongly contested by Austrian neighbours. It

[646] European Commission's Environmental Implementation Review on Hungary <http://ec.europa.eu/environment/eir/pdf/factsheet_hu_en.pdf> (accessed on 2020.01.05).

helps reducing CO_2 emissions, but results in a neglect of renewable power sources.[647]

5.2.1.1. Constitution

Environmental law has been entering the Hungarian legal system, naturally following the imperative principle of integration, provided in Article 11 TFEU, according to which it is necessary to build environmental considerations and priorities into all norms, plans and activities using or affecting the environment.[648]

Actually, the highest level of national environmental legislation is the Fundamental Law of Hungary, form 25 April 2011.[649] The constitutional text also has environmentally relevant provisions, serving to protect the natural foundations of life.

The defence of the interest of future generations[650] is naturally influenced by the human right to a healthy environment and linked to the respect of human dignity

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[647] See Eszter Zalan, "Commission still silent on Hungarian nuclear contract," *EU Observer* (October 4, 2017) <https://euobserver.com/energy/139183> (accessed on 2020.01.05); Jan Burck et al, *The Climate Change Performance Index: Results 2017* (Berlin: Germanwatch, 2017) <https://germanwatch.org/sites/germanwatch.org/files/publication/16484.pdf> (accessed on 2020.01.05); and Sustainable Governance Indicators, Bertelsmann Stiftung 2019 <http://www.sgi-network.org/2018/Hungary/Environmental_Policies> (accessed on 2020.01.05).

[648] For more on this principle, see Beate Sjåfjell, "The Environmental Integration Principle: A Necessary Step Towards Policy Coherence for Sustainability," in Francesca Ippolito, Maria Eugenia Bartolino and Massimo Condinanzi (eds.), *The EU and the Proliferation of Integration Principles under the Lisbon Treaty* (Abingdon: Routledge, 2019), Chapter 6; University of Oslo Faculty of Law Research Paper No. 2018-31 <https://ssrn.com/abstract=3294910> (accessed on 2020.01.05).

[649] The last version of the Fundamental Law of Hungary is available on the website of the Hungarian Government <https://www.kormany.hu/download/f/3e/61000/TheFundamentalLawofHungary_20180629_FIN.pdf> (accessed on 2020.01.05).

[650] This interest is enshrined in Article P(1), Article 30(3), Article 38(1), and in Closing and Miscellaneous Provision 16.

and life. This is, therefore, a right which is seen as belonging to the third generation, the solidarity or collective-developmental group of rights. In essence, the rights of future generations were the focus of the office of the Parliamentary Commissioner for Future Generations in Hungary, which was created in 2007 to safeguard the right to a healthy environment. In May 2008, Dr. Sándor Fülöp was elected for a six-year term and has succeeded in protecting Hungary's plant gene bank from takeover by a multinational corporation, preventing the privatization of Hungarian public water utilities, and protecting the Tokaj region, a World Heritage site, from the development of a straw-fired power plant. The Hungarian Constitution of 2011 intends to describe the natural resources that should be protected in the interests of future generations. Nevertheless, in 2012, the position of Commissioner was downgraded to Deputy Ombudsperson.[651]

In addition to the rights of future generations, the Fundamental Law also comprises several subfields of environmental law by mentioning their protected subjects and emphasising their importance.[652]

However, with regard to environmental rights, Articles XX to XXII are the key provisions. First of all, Article XX states that "every person shall have the right to physical and mental health" (1) and points out to ensuring environmental protection (2).[653] Then "the right of every person to a healthy environment" is

[651] See Alice Vincent, "Ombudspersons for Future Generations: Bringing Intergenerational Justice into the Heart of Policymaking," UN Chronicle, United Nations <https://www.un.org/en/chronicle/article/ombudspersons-future-generations-bringing-intergenerational-justice-heart-policymaking> (accessed on 2020.01.05).

[652] Gergely Horváth, "The renewed constitutional level of environmental law in Hungary," *Acta Juridica Hungarica*, Vol. 56, No. 4 (2015), 302-316.

[653] Article XX(2) provides that the Republic "shall promote the exercise of the right set out in Paragraph (1) by ensuring that its agriculture remains free from any genetically modified organism, by providing access to healthy food and drinking water, by managing industrial safety and healthcare, by supporting sports and regular physical exercise, and by ensuring environmental protection."

expressly enshrined in Article XXI(1), through an imperative recognition and enforcement by the State.[654]

Still in the area of environmental rights, or (for the more sceptical ones) rights related to living or enjoying the public space, Article XXII(1) ensures that legal protection for homes must be provided and the State "shall strive to ensure decent housing conditions and access to public services for everyone." Paragraph (2) completes the previous provision stating that both the State and local governments must "contribute to creating decent housing conditions by striving to ensure accommodation for all persons without a dwelling."

These are, in fact, the most relevant examples of how Hungarian constitutional law intends to protect environmental rights, and the main constitutional triggers, conditions or constitutional guidelines for more environmental based laws and policies, which are to be analysed in the following paragraphs.

5.2.1.2. Statutory law and policy

According to the European Commission, the enforcement approach under EU laws, such as IE Directive or EIA Directive, has been creating strong rights for citizens to have access to relevant information and to participate in permitting and assessment process. These solutions empower NGOs and the general public to ensure that permits are appropriately granted and their conditions respected.[655]

Following the crucial Aarhus narrative, it is essential for public authorities, the public and business that environmental information is shared efficiently and

[654] Paragraph (2) adds that anyone "who causes any damage to the environment shall be obliged to restore it or to bear all costs of restoration as defined by law."

[655] European Commission, "The Environmental Implementation Review 2019, Hungary Country Report," Brussels, 4.4.2019 SWD (2019) 121 final <http://ec.europa.eu/environment/eir/pdf/report_hu_en.pdf> (accessed on 2020.01.05).

effectively.[656] Moreover, public participation allows authorities to make better and more informed decisions, taking public concerns into account. On the other hand, access to justice allows citizens and NGOs to use national courts to protect the environment.[657] It includes the right to bring legal challenges ("legal standing").

In this area, Hungary has a dedicated national information system on the environment (OKIR)[658] which intends to cover almost all environmental areas. The administrative organs performing environmental, conservation, water protection measures and tasks accumulate large environmental data on the load to environment and the status of the environment. Some of them are the regional inspectorates' own measurement data, while others come from the data provided by the environment users under statutory regulation. The data are entered to a centralized computer database in such way that the Environment Protection and Nature Conservation Inspectorates, who perform the measurements and process the reported data, transmit the data directly to a central database operated by the Ministry of Agriculture.[659] Even though, according to the European Commission, while environmental data and information on legislation is easily accessible, some reports and studies are still missing, and it also lacks no information on chemicals.[660]

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[656] The Aarhus Convention, the Access to Environmental Information Directive (2003/4/EC), and the INSPIRE Directive (2007/2) together create a legal foundation for the sharing of environmental information between public authorities and with the public.

[657] The guarantees are explained in Commission Notice on access to justice in environmental matters <https://ec.europa.eu/environment/aarhus/pdf/notice_accesstojustice.pdf> (accessed on 2020.01.05).

[658] Hungarian name for National Environmental Information System (*Országos Környezetvédelmi Információs Rendszerhez*).

[659] More information on this issue is available on the OKIR website <http://web.okir.hu/en/> (accessed on 2020.01.05).

[660] European Commission, "The Environmental Implementation Review 2019, Hungary Country Report" (2019).

In the areas of sustainable development and climate change, Hungary has a National Framework Strategy on Sustainable Development of Hungary (NSDS), which more recent version, for the period of 2012–2024, was entitled "National concept on the transition towards sustainability."[661] The second National Climate Change Strategy (NCCS II) – review of the first National Climate Change Strategy – was approved by Decision 23/2018. (X. 31.) OGY.[662] The National Decarbonisation Strategy and the National Adaptation Strategy were part of the NCCS II. These instruments have among their short-term action lines coordinated development of "green infrastructure" elements, including natural, semi-natural and rehabilitated habitats, in order to strengthen the physical connections and links between them, to enhance their sustainability and resilience.

With regard to urban areas, although Hungary does not have a single national urban policy instrument, given that a national urban policy is under development (including prior elements of the national guidance on spatial planning), it provides national guidelines on sustainable and integrated urban development. A National Development and Territorial Development Concept (NDTC), for the period 2014-2030,[663] incorporates general principles for urban policy.[664] NDTC is oriented to define a vision for Hungary's regional

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[661] The NSDS was adopted by Resolution 18/2013. (III.28.) of the Hungarian Parliament in the spring of 2013 <http://extwprlegs1.fao.org/docs/pdf/hun184460.pdf> (accessed on 2020.01.05).

[662] Decision 23/2018. (X. 31.) OGY in Hungarian language <http://doc.hjegy.mhk.hu/20184130000023_1.PDF> (accessed on 2020.01.05).

[663] Approved by Parliament Resolution No. 1/2014. (I. 3.) OGY. Government of Hungary, "National Development 2030: National Development and Territorial Development Concept," Hungarian Official Journal, Vol. 2014-1 (2014) <https://regionalispolitika.kormany.hu/download/b/c9/e0000/OFTK_vegleges_EN.pdf> (accessed on 2020.01.05).

[664] A National Landscape Strategy, for the period 2017-2026, was adopted by the Governmental Decision 1128/2017. (III.20.) <https://www.kormany.hu/download/f/8f/11000/Hungarian%20National%20Landscape%20Strategy_2017-2026_webre.pdf> (accessed on 2020.01.05).

development to 2030 as well as medium- and long-run objectives. The main goals are in the following areas: attractive economic environment and dynamic economy; growing population, communities; strategically used natural resources; and balanced spatial structure. A review of the NDTC is under preparation for setting new mid-term objectives for development policy and territorial development of Hungary.[665] It explicitly includes development objectives for urban areas, more specifically under objective 3.1.4: "Development of a city network guaranteeing a multi-centred spatial structure", which provides a vision for urban development, focuses on developing a network of cities and fostering functional urban areas, and pays specific attention to the Budapest area.[666]

The analysis above demonstrate that, although the protection of the environment (and environmental rights as well) has an important position in the constitutional text and some measures already exist to implement that protection, non-constitutional state-created legislation and policy still need to be improved. Some doubts exist due to recent political developments, which will only be clarified during the next years.[667]

5.2.3. Portugal

In accordance with the analysis of the European Commission (EC), Portugal is currently working to promote the transition to a circular economy, having

[665] See OECD, "Regional Outlook 2019 – Hungary" (2019) <https://www.oecd.org/cfe/_Hungary.pdf> (accessed on 2020.01.05).

[666] OECD, "The State of National Urban Policy in Hungary" (2017) <https://www.oecd.org/regional/regional-policy/national-urban-policy-Hungary.pdf> (accessed on 2020.01.05).

[667] European Commission, "The Environmental Implementation Review 2019, Hungary Country Report" (2019).

adopted, in December 2017, a National Action Plan for the Circular Economy (2017-2020).[668] It is now crucial to implement the measures determined in it.

However, waste management remains an important challenge. According to the Commission's 2018 "Early Warning Report"[669], Portugal is still one of the countries at risk of missing the EU target of recycling 50% of municipal waste by 2020. Based on 2017 data, the overall recycling rate is 28%. There are also big differences across regions, so further efforts are needed to improve waste management.

With regard to water management, the quantity and quality of the information included in the second River Basin Management Plans pursuant to the Water Framework Directive has significantly improved. Despite the progress achieved in recent years in water management, challenges remain, for instance with water governance and the need to close gaps in water investments, especially for waste and water. At the municipal level, the sector remains highly fragmented and reorganisation of the water and waste-water services has yet to show its full potential.[670]

Portugal recently moved up one to 17th place in non-profit organisation *Germanwatch*'s Climate Change Performance Index (CCPI) for 2019. The country has demonstrated a relatively high share in renewable energies and ambitious

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[668] Resolution of the Council of Ministers No. 190-A/2017, of 11 December 2017 <https://dre.pt/home/-/dre/114337039/details/maximized> (accessed on 2020.01.05). Plan available in English language <https://circulareconomy.europa.eu/platform/sites/default/files/strategy_-_portuguese_action_plan_paec_en_version_3.pdf> (accessed on 2020.01.05).

[669] Commission Staff Working Document, "The early warning report for Portugal," Ref. SWD(2018) 422 final <https://ec.europa.eu/environment/waste/pdf/early_warning_report_PT.pdf> (accessed on 2020.01.05).

[670] European Commission, "The Environmental Implementation Review 2019 - Country Report Portugal," Ref. SWD(2019) 129 final (2019) <https://ec.europa.eu/environment/eir/pdf/report_pt_en.pdf> (accessed on 2020.01.05).

2030 renewables targets. National experts have been criticising weak performance concerning the transport sector and call for more investments in public transport and e-mobility. Even though, overall the country ranks in a promising position in the field of climate policies, with national experts praising the country's plan to become carbon neutral by 2050 and to achieve coal phase-out in 2030. Among the reality of the EU, Portugal is also part of the group of Member States backing an EU 2050 net zero emissions goal.[671]

5.2.1.1. Constitution

As recognised by Boyd, Portugal (1976) was, along with Spain (1978), the first nation to enshrine the right to live in a healthy environment.[672] The Constitution of the Portuguese Republic provides, in its Article 66, the fundamental right to a healthy environment.[673] Its protection within this "Constitution of the environment,"[674] is a task of the public entities (a fundamental task of the State)[675],

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[671] Jan Burck et al, *Climate Change Performance Index: Results 2019* (Berlin, Germanwatch: 2019) <https://germanwatch.org/sites/germanwatch.org/files/CCPI2019_Results_WEB.pdf> (accessed on: 2020.01.05).

[672] Boyd, *The Environmental Rights Revolution* (2012), 62. Some authors considered that the elevation of the right to the environment in the Portuguese Constitution was a "relative originality" in comparative law. See J.J. Gomes Canotilho and Vital Moreira, *Constituição da República Portuguesa Anotada*, Vol. I, 4th ed. revised and reprinted (Coimbra: Coimbra Editora, 2014), 845.

[673] Article 66(1) establishes that "everyone has the right to a healthy, ecologically balanced living environment and the duty to defend it."

[674] The term "Constituição do ambiente" (in Portuguese) can be found in José Joaquim Gomes Canotilho, "O Princípio da sustentabilidade como Princípio estruturante do Direito Constitucional," *Tékhne – Revista de Estudos Politécnicos Polytechnical Studies Review*, Vol. VIII, no. 13 (2010), 7-18. The author has developed the concept of "State of Environmental Law or Ecological Constitutional State," which should accompany al the productive and functioning process from and environmental perspective. See José Joaquim Gomes Canotilho, "Estado Constitucional Ecológico e Democracia Sustentada," *RevCEDOUA*, No. 8 (2001), 9-16; and José Joaquim Gomes Canotilho, "Juridicização da ecologia ou ecologização do direito," *Revista Jurídica do Urbanismo e do Ambiente*, No. 4, (1995), 69-79.

[675] See Article 9(e).

but its rational management, quality and integrity is also a responsibility of all the community.[676] Actually, paragraph 2 intends to exhaustively describe all the means to protect the environment and the right to it. Nevertheless, being impossible to predict all the means for that, the current version of the provision demonstrates to be too ambitious, given that there is no need of so many subparagraphs to demonstrate that the provision of paragraph 1 is an imperative which can be naturally implemented.

According to the position of the Portuguese Supreme Administrative Court, the right to the environment is considered as a public subjective right which is inherent to the existential space of the citizen, independently of its justiciability or immediate practicability.[677]

For Miranda and Medeiros, the norm could be systematised in the following:

a) Diversity and plurifunctionality of subjective situations;
b) Specific relation with Article 52(3), as a norm of guarantee which provides jurisdictional protection of the environment and of liability for individual and collective damages;
c) As key-ideas for public policies on sustainable development and solidarity between generations;
d) Preventive principle;
e) Principle of collective participation; and
f) All of them driving the protection and promotion of the quality of life, in a *risk society*.[678]

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[676] See Article 66(2).

[677] Judgment of the Portuguese Supreme Administrative Court of 25 June 1992, Case 027739, Appendix DR, 16 April 1996, 4278 <http://www.dgsi.pt/jsta.nsf/35fbbbf22e1bb1e680256f8e003ea931/7d93b02e55485fe9802568fc003904a6?OpenDocument&Highlight=0,027739> (accessed on 2020.02.06).

[678] Jorge Miranda and Rui Medeiros, *Constituição Portuguesa Anotada*, Tomo I (Coimbra: Coimbra Editora, 2005), 680-686.

Moreover, the fundamental law also enshrines in its Article 65 the right to housing, providing in its paragraph 1 that "Everyone has the right, for him/herself and his/her family, to housing of adequate size, in a hygienic and comfortable condition, preserving personal intimacy and family privacy." Nonetheless, this constitutional right clearly needs further implementation, which has depended not only on infra-constitutional legislation but also on political decision, and more specifically public housing (managed by national and local governments).[679]

The Portuguese Constitution also stipulates in its Article 52(3) a right to *actio popularis* (or popular legitimacy),[680] which is a considerably broad mechanism, being applicable when the following interests are involved: public health, environment, quality of life, protection of consumers, cultural heritage and public domain.[681] This right not only complements the already mentioned substantive environmental rights, but also opens a way (constitutionally) for citizens to exercising environmental procedural rights. Here, at least, the Portuguese Constitution expresses its ambition of concretising and

[679] Ana Drago, "Is This What the Democratic City Looks Like? Local Democracy, Housing Rights and Homeownership in the Portuguese Context," *International Journal of Urban and Regional Research*, Vol. 41, Issue3 (2017), 426-442.

[680] On the requirements of this legitimacy relating to the interpretation of administrative acts, see the Judgment of the Portuguese Supreme Administrative Court of 13 January 2005, Case 085/04 <http://www.dgsi.pt/jsta.nsf/35fbbbf22e1bb1e680256f8e003ea931/9514d2c1f559546680256f94003b68cd?OpenDocument&Highlight=0,ac%C3%A7%C3%A3o,popular,2005> (accessed on 2020.02.06).

[681] According to Article 52(3)a), "Everyone, in person or through associations of the interests concerned, is entitled to popular action in the cases and under the terms of the law, including the right to claim compensation from the injured party, including:

(a) promote the prevention, cessation or prosecution of infringements of public health, consumer rights, quality of life, preservation of the environment and cultural heritage,

(b) (…)."

implementing the protection of those rights and not only providing them as mere aspirations (or fuzzy interests) but real rights.[682]

Even though, from the perspective of Amado Gomes, the Portuguese environmental Constitution was reduced to a merely symbolic nature after the country's adhesion to the European Economic Community (now EU).[683] In fact, with the obligation of Member States to directly receive or transpose (depending on the typology of the acts) the EU legislation to their own jurisdictions, constitutional environmental provisions appear to work as general support to those more specific provisions form EU environmental law.

In a critical analysis to the right to the environment, and after the positions of different national and international authors, Amado Gomes also concludes that:

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[682] See Carla Amado Gomes, "Constituição e Ambiente: Errância e Simbolismo," ICJP (2006) <http://www.icjp.pt/sites/default/files/media/288-132.pdf> (accessed on 2020.01.05); Carla Amado Gomes, "O ambiente na ternura dos 40 anos da Constituição de 1976: breve apontamento e sugestões para uma eventual revisão," ICJP (2016) <https://www.icjp.pt/sites/default/files/papers/textorevisaocrp40ambiente.pdf> (accessed on 2020.01.05). With regard to the right to environmental information under the Portuguese Constitution and the related legal system, see the Decision of the Constitutional Court no. 136/05 of 15 March 2005 <http://www.tribunalconstitucional.pt/tc/acordaos/20050136.html> (accessed on 2020.01.30). On this issue, see also Carla Amado Gomes, "A caminho de uma ecocidadania: notas sobre o direito à informação ambiental: Anotação ao Acórdão do Tribunal Constitucional nº 136/05, de 15 de Março de 2005," Carla Amado Gomes (ed.), *Direito do Ambiente: Anotações Jurisprudenciais Dispersas*, 2nd ed. revised and updated (Lisboa: ICJP, 2017), 81-92. More recently, see Judgment of the Portuguese Southern Central Administrative Court of 11 June 2015, Case 8199/11 <http://www.dgsi.pt/jtca.nsf/170589492546a7fb802575c3004c6d7d/927485370a973eca80257e67003ba398?OpenDocument&Highlight=0,ac%C3%A7%C3%A3o,popular> (accessed on 2020.02.06), where the Portuguese Southern Central Administrative Court declared that the mere existence of an NGO is sufficient for it to have legal standing, and then Judgment of the Portuguese Supreme Administrative Court of 28 January 2016, Case 1362/12 <http://www.dgsi.pt/jsta.nsf/35fbbbf22e1bb1e680256f8e003ea931/e3b116bb182edc7080257f50003fb733?OpenDocument&Highlight=0,a%C3%A7%C3%A3o,popular> (accessed on 2020.02.06, where it was recognised legal standing based on *actio popularis* of a local NGO, on the licensing of a number of private constructions. See Aragão, "Environmental Standards in the Portuguese Constitution" (2019), 262.

[683] Amado Gomes, "O ambiente na ternura dos 40 anos da Constituição de 1976" (2016).

a) The task of protecting the environment is today an *acquis* in the context of the mission of public interest of states and other public entities;
b) The notion of environment is not pacific, even if it is possible to find a trend to reduce its operative content to natural environmental goods;
c) Partially due to constitutional and legislative conceptions and also due the magnetism of international instruments, the environment is understood as an object of subjective rights;
d) There is a specific preoccupation in reinforcing the procedural component, especially with regard to legitimising public intervention in the defence of supra-individual goods or elements; and
e) The protection is centred in prevention, but also includes responsibility (or liability) concerning for conducts that may damage the environment.[684]

5.2.1.2. Statutory law and policy

Portuguese Base-Law No. 19/2014 of 14 April approved the new environmental policy in the country, which is designed to realise environmental rights through the promotion of sustainable development. It must be supported by the proper management of the environment, in particular ecosystems and natural resources, which must contribute to the development of a low-carbon society and a "green economy," with rational and efficient use of natural resources. According to Article 2(1), the economy must then ensure the welfare and the gradual improvement of the quality of life of the citizens.

[684] Carla Amado Gomes, *Risco e Modificação do Acto Autorizativo Concretizador de Deveres de Protecção do Ambiente* (Lisboa: author's ed., 2012), 74 <https://www.icjp.pt/sites/default/files/publicacoes/files/Risco&modifica%C3%A7%C3%A3o.pdf> (accessed on 2020.01.30).

In a large number of sectors, Portuguese environmental law and standards correspond with EU Law.[685] Even though, in some areas Portuguese government has been implementing more stringent standards than those required by EU law (sometimes known as the "gold plating of EU law"). In certain cases, there is evidence that this may be influenced by the constitution.

As an example, under the EIA Directive, the results of an assessment need only to "be taken into consideration" in the final decision relating to a development. However, in Portuguese legislation recommendations of EIA are binding on the final decision, where significantly adverse impacts are significant and they cannot be avoided, reduced or remedied, the implementation or development of a project or activity cannot be authorised.[686] Moreover, the industrial emissions framework[687] and the transposition of the EU directive on Access to Environmental Information[688] are examples of standards that seem to go further EU Law.

Nevertheless, as Aragão explains,

> "neither the constitutional provisions nor the laws themselves that relate to environmental protection operate like prophecies; they are not magic formulae that self-fulfil simply through enactment."[689]

These provisions require active commitment from the relevant executive and judicial branches of government to ensure that their purposes are properly

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[685] See, for example, Water Framework Directive, or the obligations under the Aarhus Convention.
[686] See Article 22 of Decree-Law No. 151-B/2013 of 31 October (Portuguese EIA Framework), modified and republished by Decree-Law No. 152-B/2017 of 11 December <https://dre.pt/web/guest/pesquisa/-/search/114337013/details/maximized> (accessed on 2020.01.05).
[687] See Decree-Law No. 127/2013 de 30 August (Portuguese IE Framework) <https://dre.pt/pesquisa/-/search/499546/details/maximized> (accessed on 2020.01.05).
[688] See Law No. 26/2016 of 22 August <https://dre.pt/pesquisa/-/search/75177807/details/maximized> (accessed on 2020.01.05).
[689] Aragão, "Environmental Standards in the Portuguese Constitution" (2019), 263-264.

fulfilled. And there is, in fact, lack of judicial leadership in Portugal in terms of environmental protection.[690]

Portuguese environmental and planning legislations provide participation and consultation processes. EIA or territorial planning frameworks are only examples of it.[691] However, participation in environmental and planning processes is still low. With regard to that, literature argues that there is a relationship between citizen knowledge concerning laws and legal instruments and the level of public participation related to environmental and spatial planning policies. The basic idea would be that normative ignorance prevents citizens to fully exercise their rights. Nevertheless, according to Carreira et al, most of citizens feel that they are aware of the existence of public participatory components (laws and legal instruments) for spatial planning, and there is a significant relationship between the knowledge and citizen´s participation concerning to local policies.[692] Participation works more for participatory budgets than for EIA or territorial planning.

Regarding urban policies, Portugal adopted in 2015 the "Strategy for Sustainable Cities 2020."[693] It is based on other already released world and European instruments, and recommends the application by national and local governments of solutions to inform and integrate citizens in the design and implementation of sustainability measures and urban efficiency, making cities able to be more sustainable, more resilient and greener, where governance and citizenship reach

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[690] Aragão, "Environmental Standards in the Portuguese Constitution" (2019), 247-264.

[691] See the examples of Article 15 of Portuguese EIA Framework or Article 6 of Decree-Law No. 80/2015 of 14 May (Portuguese Territorial Planning Framework) <https://dre.pt/pesquisa/-/search/67212743/details/maximized> (accessed on 2020.01.06).

[692] Vanda Carreira, João Reis Machado, and Lia Vasconcelos, "Legal citizen knowledge and public participation on environmental and spatial planning policies: A case study in Portugal," *International Journal of Humanities and Social Science Research*, Vol. 2, Issue 7 (July 2016), 28-33.

[693] The strategy was approved by Resolution of the Council of Ministers No. 61/2015 of 16 July <https://dre.pt/home/-/dre/69982738/details/maximized> (accessed on 2020.01.05).

high levels of excellence. The strategy understands cities as extremely complex systems, joining in the same space a multiplicity of actors, goods and activities, which interact with each other in a profusion of fluxes and interchanges. Consequently, capturing the way cities operate is an increasingly fundamental issue to improve the performance of urban systems and to mitigate the effects of the urban footprint on the environment and on people's lives. In this sense, the mentioned Strategy suggests solutions for: (i) more prosperity; (ii) more resilience; (iii) more health; (iv) more justice; (v) more connection; and (vi) more cognition in the cities. However, with this strategy in force, further legislations with environmental and planning consequences do not refer (and appear not to consider) the existence of this instrument and its inspiring principles and targets.

A last paragraph should be reserved to mention that Portugal has been positioning itself as a country dedicated to tackling, mitigating and adapting to climate change. For that, governments have adopted several policies, such as the "National Roadmap for Low Carbon 2020"[694], "Strategic Framework for Climate Policy", "National Programme for Climate Change 2020/2030", and "National Strategy for Climate Change Adaptation."[695]

5.3. US law

In the US legal system, the federal constitution lacks any environmental provision and the environmental protections by mostly guaranteed by four major federal environmental statutes (alongside the many others), which may reach constitutional levels depending on the interpretation of judiciary. The mentioned

[694] Adopted by the Resolution of the Council of Ministers No. 93/2010 of 26 November <https://dre.pt/pesquisa/-/search/308983/details/maximized> (accessed on 2020.01.05).

[695] Adopted by the Resolution of the Council of Ministers No. 56/2015 of 30 July <https://dre.pt/pesquisa/-/search/69905665/details/maximized> (accessed on 2020.01.05).

statutory laws provide broad, sweeping guarantees, establishing the environmental policy of the nation and securing environmental quality for its people.[696]

Though it may seem that environmental rights can be better protected when provide in nation's constitutions, some experiences such as the already mentioned case of Denmark readily demonstrate that this is not necessarily the case. In fact, both constitutional and statutory proclaimed rights can succeed and or fail, depending on their application by public administration and the judiciary. In the case of the US, the judiciary ultimately determines whether the guarantees of those laws and their impressive language translate into actionable rights.[697]

5.3.1. US Constitution

The US Constitution does not provide environmental rights. In fact, it is understood as a "pre-ecological" legal instrument. Therefore, the constitutional text contains no reference, either explicit or implicit, to environmental issues.[698] This means that federal environmental law in the US is entirely statutory. A large number of environmental laws arose during the 1970s that transformed the landscape for environmental law in the US, "in response to rising public consciousness during the 1950s and 1960s of the perils of pollution and of the

[696] For all, see Jonathan Z. Cannon, *Environment in the Balance: The Green Movement and the Supreme Court* (Cambridge, MA: Harvard University Press, 2015).

[697] Kyle Burns, "Constitutions & the Environment: Comparative Approaches to Environmental Protection and the Struggle to Translate Rights into Enforcement," *Vermont Journal of Environmental Law* (2017) <http://vjel.vermontlaw.edu/constitutions-environment-comparative-approaches-environmental-protection-struggle-translate-rights-enforcement/> (accessed on 2020.01.05).

[698] Jonathan Z. Cannon, *Environment in the Balance* (2015).

waste of natural resources."[699] These statutes intended to constitute a "quasi-constitutional reordering" of federal law.[700]

Usually, environmental law reflects a view that human beings have a right to environmental protection. Even before the first Earth Day, Senator Gaylord Nelson of Wisconsin proposed an amendment to the United States Constitution in 1968 for recognising an "inalienable right to a decent environment" and requiring both the federal and state governments to "guarantee" that right. This proposal and other efforts to add an environmental right to the United States Constitution have failed.[701]

At the state level, the Hawaiian constitution proclaims that every person has the "right to a clean and healthful environment"[702], and the constitutions of Illinois[703], Massachusetts[704], Montana[705], and Pennsylvania[706] also enshrine similar rights.

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[699] Richard J. Lazarus, "The Greening of America and the Graying of United States Environmental Law: Reflections on Environmental Law's First Three Decades in the United States," *Virginia Environmental Law Journal*, Vol. 20 (2001), 76-77.

[700] Cannon, *Environment in the Balance* (2015), 33. Also in this sense, see Burns, "Constitutions & the Environment: Comparative Approaches to Environmental Protection and the Struggle to Translate Rights into Enforcement" (2017).

[701] James Salzman, and Barton H. Thompson Jr., *Environmental Law and Policy*, 4th edition (St. Paul, MN: Foundation Press, 2014), 188. Also see Lynton K. Caldwell, "The Case for an Amendment to the Constitution of the United States for Protection of the Environment: Affirming Responsibilities Rather Than Declaring Rights May be the Most Promising Route to the Objective," *Duke Environmental Law & Policy Forum*, Vol. 1, No. 1 (1991), 1-10 <https://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=1198&context=delpf> (accessed on 2020.01.05).

[702] See Hawaiian Constitution, Article XI, Section 9 <http://lrbhawaii.org/con/conart11.html> (accessed on 2020.01.05).

[703] Article XI, Section 2 <http://www.ilga.gov/commission/lrb/conent.htm> (accessed on 2020.01.05).

[704] Article XCVII <https://malegislature.gov/laws/constitution> (accessed on 2020.01.05).

[705] See Article II, Part II, Section 3 <https://leg.mt.gov/bills/mca/title_0000/article_0020/part_0010/section_0030/0000-0020-0010-0030.html> (accessed on 2020.01.05).

[706] See Article 1, §27 <https://www.legis.state.pa.us/WU01/LI/LI/CT/HTM/00/00.HTM> (accessed on 2020.01.05).

5.3.2. US federal statutory law and policy

With the federal legal system, four US laws can be identified as the most prominent. They are the National Environmental Policy Act, the Endangered Species Act, the Clean Water Act, and Clean Air Act.

The National Environmental Policy Act (NEPA)[707], which is usually understood as "the Magna Carta of environmental protection"[708] NEPA sets the environmental policy of the federal government, regulating the responsibility and action of federal agencies in this area. It establishes the inclusion of Environmental Impact Statement "for all proposals for legislation and other major federal actions which may significantly affect the quality of the human environment."[709]

Considered by Cannon as "a rudimentary bill of rights for biodiversity"[710], the Endangered Species Act (ESA)[711] created an absolute mandate for federal agencies to protect endangered or threatened.[712] The main purpose of ESA was, therefore, to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved."[713] As a result, it still remains a strong legal tool for species preservation.

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[707] 42 U.S.C. §4321 et seq. (1969). See more on the EPA webpage <https://www.epa.gov/laws-regulations/summary-national-environmental-policy-act> (accessed on 2020.01.05).

[708] Cannon, *Environment in the Balance* (2015), 34.

[709] Joseph C. Sweeney, "Protection of the Environment in the United States," *Fordham Environmental Law Report*, Vol. 1 (1989), 15.

[710] Cannon, *Environment in the Balance* (2015), 35.

[711] 16 U.S.C. § 1531 et seq. (1973) <https://www.govinfo.gov/content/pkg/STATUTE-87/pdf/STATUTE-87-Pg884.pdf> (accessed on 2020.01.05).

[712] Lazarus, "The Greening of America and the Graying of United States Environmental Law" (2001), 79.

[713] J.B. Ruhl, "Keeping the Endangered Species Act Relevant," *Duke Environmental Law & Policy Forum*, Vol. 19 (2009), 280.

The Clean Water Act (CWA)[714] was adopted after a failed 1965 federal law and a common law regime which applied often vague and indeterminate nuisance concepts and maxims of equity jurisdiction.[715] CWA's purpose was to protect and restore chemical, physical, and biological integrity of the Nation's waters, based on a main policy of eliminating all discharges of pollution into the nation's waters by 1985[716] and of the aspiration to achieve fishable and swimmable waters everywhere by 1983.[717] However, as Salzman and Thompson explain, most facilities that discharge effluent into the nations' waterways need to reduce their discharges only to the degree technologically feasible, and some pollution sources such as farms enjoy broad exemptions from the CWA.[718]

Finally, the Clean Air Act (CAA)[719] intended to focus more on human health than on purely ecological interests. The CAA's purpose is to protect the nation's air quality so as to promote the public health and welfare and the productive capacity of its population. It determined the National Ambient Air Quality Standards, which are "requisite to protect the human health," even in the face of great economic cost.[720] These are, therefore, the main statutes form the foundational US environmental law and which have lasted until today, with some revisions or modifications.

Even not reaching constitutional status, the presence of environmental protection at the statutory level demonstrates a substantial strength in some statutes, such

[714] 33 U.S.C. §1251 et seq. (1972). See more on the EPA webpage <https://www.epa.gov/laws-regulations/summary-clean-water-act> (accessed on 2020.01.05).

[715] David Drelich, "Restoring the Cornerstone of the Clean Water Act," *Columbia Journal of Environmental Law*, Vol. 34 (2009), 269.

[716] 33 U.S.C. § 1251(1)(a).

[717] Lazarus, "The Greening of America and the Graying of United States Environmental Law" (2001), 78.

[718] Salzman and Thompson, *Environmental Law and Policy* (2014), 188.

[719] 42 U.S.C. §7401 et seq. (1963).

[720] 42 U.S.C. § 7409(b)(1).

as NEPA. In fact, this act recognises "the profound impact of man's activity on the interrelations of all components of the natural environment" and declares that federal policy shall "use all practicable means and measures (…) in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfil the social, economic, and other requirements of present and future generations of Americans."[721]

Moreover, in 1994, Presidente Bill Clinton enacted Executive Order #12898 on Environmental Justice, designed to focus Federal attention on the environmental and human health conditions in minority communities and low-income communities with the goal of achieving environmental justice. It is also intended to promote non-discrimination in Federal programmess substantially affecting human health and the environment, and to provide minority communities and low-income communities access to public information on, and an opportunity for public participation in, matters relating to human health or the environment.[722]

In the areas of climate change, a Climate Action Plan was adopted under Barack Obama's Presidency, with the purpose of reducing CO_2 emissions.[723] The Action Plan included preserving forests, encouraging the use of alternate fuels, and increased study of climate change. It was issued in June 2013 and dedicated a part to "building stronger and safer communities and infrastructure[724], with

[721] 42 U.S.C. § 4331(a).

[722] "Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" – February 11, 1994. Available on EPA webpage <https://www.epa.gov/fedfac/epa-insight-policy-paper-executive-order-12898-environmental-justice#memo1> (accessed on 2020.01.05).

[723] See The President's Climate Action Plan (The Report of the Executive Office of the President of June 2013) <https://obamawhitehouse.archives.gov/sites/default/files/image/president27sclimateactionplan.pdf> (accessed on 2020.01.05).

[724] "By necessity, many states, cities, and communities are already planning and preparing for the

paragraphs for "establishing a state, local, and tribal leaders task force on climate preparedness"[725], and supporting communities as they prepare for climate impacts.[726]

In March 2017, new President Donald J. Trump signed an executive order to nullify Obama's Clean Power Plan, in an effort of reviving the coal industry.[727]

5.3.3. Case law

In the words of Salzman and Thompson, "both judicial opinions and statutes often speak in the language of rights."[728] Nevertheless, even recognising those

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impacts of climate change. Hospitals must build capacity to serve patients during more frequent heat waves, and urban planners must plan for the severe storms that infrastructure will need to withstand. Promoting on-the-ground planning and resilient infrastructure will be at the core of our work to strengthen America's communities."

[725] "To help agencies meet the above directive and to enhance local efforts to protect communities, the President will establish a short-term task force of state, local, and tribal officials to advise on key actions the federal government can take to better support local preparedness and resilience-building efforts. The task force will provide recommendations on removing barriers to resilient investments, modernizing grant and loan programs to better support local efforts, and developing information and tools to better serve communities."

[726] "Federal agencies will continue to provide targeted support and assistance to help communities prepare for climate change impacts. For example, throughout 2013, the Department of Transportation's Federal Highway Administration is working with 19 state and regional partners and other federal agencies to test approaches for assessing local transportation infrastructure vulnerability to climate change and extreme weather and for improving resilience. The Administration will continue to assist tribal communities on preparedness through the Bureau of Indian Affairs, including through pilot projects and by supporting participation in federal initiatives that assess climate change vulnerabilities and develop regional solutions. Through annual federal agency "Environmental Justice Progress Reports," the Administration will continue to identify innovative ways to help our most vulnerable communities prepare for and recover from the impacts of climate change. The importance of critical infrastructure independence was brought home in the Sandy response. The Federal Emergency Management Agency and the Department of Energy are working with the private sector to address simultaneous restoration of electricity and fuels supply."

[727] See the text of the executive order on the White House webpage <https://www.whitehouse.gov/presidential-actions/presidential-executive-order-promoting-energy-independence-economic-growth/> (accessed on 2020.01.05).

[728] Salzman and Thompson, *Environmental Law and Policy* (2014), 188.

aspirations, the promise of NEPA was not absolutely accomplished when, in 1978, the Supreme Court reduced the significance of this language. In effect, the Supreme Court deluded the prospect for substantive interpretation of NEPA's requirements, considering it as "essentially procedural."[729] The Court also argued, 1976, that, despite its strong and unambiguous language, NEPA did not allow courts to substitute their judgment for an agency's or to elevate environmental factors over any other appropriate factors.[730]

Some years later, the Supreme Court did not accept the Second Circuit's use of NEPA for "the substantive standards necessary to review the merits of agency decisions."[731] However, the Court meant to "insure a fully informed and well-considered decision," but not necessarily "a decision the judges of the Court of Appeals or of this Court would have reached had they been members of the decisionmaking unit of the agency."[732] In this case, NEPA was not held as merely procedural.

According to Cannon, as of 2015, in the seventeen cases that the Supreme Court has decided regarding NEPA, the claims on behalf of environmental interests have never succeeded.[733] This means that NEPA, even being a statute, has not

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[729] *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519 (1978) <https://supreme.justia.com/cases/federal/us/435/519/> (accessed on 2020.01.05). See Karin P. Sheldon, "NEPA in the Supreme Court," *Land & Water Law Review*, Vol. 25 (1990), 84.

[730] *Kleppe v. Sierra Club*, 427 U.S. 390 (1976) <https://supreme.justia.com/cases/federal/us/427/390/> (accessed on 2020.01.05).

[731] *Strycker's Bay Neighborhood Council v. Karlen*, 444 U.S. 223 (1980) <https://supreme.justia.com/cases/federal/us/444/223/> (accessed on 2020.01.05).

[732] *Strycker's Bay Neighborhood Council v. Karlen*.

[733] Cannon, *Environment in the Balance* (2015), 34.

been read to guarantee positive rights, or even a "proto-constitutional" right to environmental protection.[734] [735]

Nonetheless, these decisions do not mean that US courts are insensitive to the protection of a healthy environment. In fact, the Ninth Circuit concluded, in 1989, that is "difficult to conceive of a more absolute and enduring concern than the preservation and, increasingly, the restoration of a decent and livable environment. Human life, itself a fundamental right, will vanish if we continue our heedless exploitation of this planet's natural resources."[736]

5.4. Examples of US state laws

In the US state laws, some acts providing environmental rights are possible to find, such as in the states of Minnesota ("Minnesota Environmental Rights Act", as M.S.A. §116B.01-13)[737] or Rhode Island ("Rhode Island Environmental Rights Act", as R.I. Gen. Laws §10-20-11).[738] These are only some examples of states

[734] However, the Supreme Court has upheld strong readings of other environmental statutes, such as in *Tennessee Valley Auth. v. Hill*, 437 U.S. 153 (1978) <https://supreme.justia.com/cases/federal/us/437/153/> (accessed on 2020.01.05). In this case, the Court held that Congress's intent in passing the Endangered Species Act was to halt and reverse the trend of species extinction, even in the face of great economic cost.

[735] For all, see Burns, "Constitutions & the Environment: Comparative Approaches to Environmental Protection and the Struggle to Translate Rights into Enforcement" (2017).

[736] *Stop H-3 Ass'n v. Dole*, 870 F.2d 1419, 1430 (9th Cir.1989) <https://www.leagle.com/decision/19892289870f2d141912090> (accessed on 2020.01.10).

[737] See 2019 Minnesota Statutes, Chapter 116B. Environmental Rights <https://www.revisor.mn.gov/statutes/cite/116B> (accessed on 2020.02.10).

[738] See Rhode Island Chapter 10-20 State Environmental Rights <http://webserver.rilin.state.ri.us/Statutes/TITLE10/10-20/INDEX.HTM> (accessed on 2020.02.10). New Jersey also used to provide it with the "Environmental Rights Act", as N.J. Stat. Title 2A, Subtit. 6, Ch. 35A. See Joseph F. Castrilli, "Environmental Rights Statutes in the United States and Canada: Comparing the Michigan and Ontario Experiences," *Villanova Environmental Law Journal*, Vol. 9 (1998), 349-437.

whose legislatures decided to provide environmental rights thorough statutory law.[739]

5.4.1. Florida

Environmental law and policy in the State of Florida aims to conserve natural resources by balancing environmental protection with economic growth, property rights, public health, and energy production. These goals are mainly implemented through laws and regulation passed at all governmental levels and influenced by a large number of stakeholders with different agendas.

The Florida Department of Environmental Protection (FDEP) is the state's lead agency for environmental management and stewardship, with responsibilities in the protection of air, water and land. FDEP is divided into three primary areas: (i) Land and Recreation (acquiring and protecting lands for preservation and recreation); (ii) Regulatory (overseeing permitting and compliance activities that protect air and water quality, and manage waste clean-ups); and (iii) Ecosystem Restoration (protects and improves water quality and aquatic resources including Everglades, springs and coastal resources).[740]

5.4.1.1. Constitution

The version of the Constitution of the State of Florida is the one as revised in 1968. It consists of certain revised articles as proposed by three joint resolutions which were adopted during the special session of June 24-July 3, 1968, and ratified by

[739] Some literature has been discussing new solutions for the protection of environmental rights under other states' constitutions. See Nicholas A. Robinson, "Environmental Human Rights in New York's Constitution," *New York State Bar Association Journal* (October 2017), 12-17.

[740] For all, see FDEP homepage <https://floridadep.gov/about-dep> (accessed on 2020.01.05).

the electorate on November 5, 1968, together with one article carried forward from the Constitution of 1885, as amended.[741]

Analysing its provisions, it is not easy to find specific norms that expressly protect environmental rights. As the Federal Constitution and other state constitutions within the reality of the US, Florida's fundamental law is more focused on the protection of classical civil rights. In fact, some has literature suggested the inclusion of more express provisions for environmental rights in Florida's State Constitution.[742]

However, there is one provision related to environmental protection. Article II, Section 7, which is dedicated to "natural resources and scenic beauty", provides the protection of the people of Florida and their environment from illegal drilling for exploration or extraction of oil or natural gas on lands beneath state waters.[743]

Even in a more negative formulation, this provision is an important demonstration that environmental rights exist in Florida's law and, even if not expressly identified, there is a specific base in the state's constitutional legal text.

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[741] The integral version of the Constitution is available on the Florida's Senate website <http://flsenate.gov/Laws/Constitution> (accessed on 2020.01.05).

[742] Martha L. Harrell, "A Proposal for Revision of the Florida Constitution: Environmental Rights for Florida Citizens," *Florida State University Law Review*, Vol. 5 (2014), 809-828.

[743] Section 7(c) provides as follows: "To protect the people of Florida and their environment, drilling for exploration or extraction of oil or natural gas is prohibited on lands beneath all state waters which have not been alienated and that lie between the mean high water line and the outermost boundaries of the state's territorial seas. This prohibition does not apply to the transportation of oil and gas products produced outside of such waters. This subsection is self-executing." (Am. by Initiative Petition filed with the Secretary of State March 26, 1996; adopted 1996; Am. proposed by Constitution Revision Commission, Revision No. 5, 1998, filed with the Secretary of State May 5, 1998; adopted 1998; Am. proposed by Constitution Revision Commission, Revision No. 4, 2018, filed with the Secretary of State May 9, 2018; adopted 2018).

5.4.1.2. Statutory law and policy

The 2019 Florida Statutes[744] generally dedicate Title XXVIII to "Natural Resources, Conservation, Reclamation, and Use", including conservation (Chapter 369); water resources (Chapter 373); navigation districts and waterways development (Chapter 374); outdoor recreation and conservation lands (Chapter 375), pollutant discharge prevention and removal (Chapter 376); energy resources (Chapter 377); land reclamation (Chapter 378); and land and water management (Chapter 380).

In its Title XLIV, dedicated to Civil Rights (Ch.760-765), Florida Statutes also dedicates Part V to "Environmental Equity and Justice", establishing the Centre for Environmental Equity and Justice[745], with the purpose of conducting and facilitating research, developing policies, and engaging in education, training, and community outreach with respect to environmental equity and justice issues.[746] The Centre sponsors "students to serve as interns at the Department of Health, the Department of Environmental Protection, and other relevant state agencies" and "may enter into a memorandum of understanding with these agencies to address environmental equity and justice issues."[747]

From a more administrative perspective, the State of Florida has a specific framework provided in Florida Administrative Code (FAC), in the specific rules for FDEP.[748] These chapters contain the state rules that FDEP currently uses to

[744] The Florida Statutes are updated annually after the conclusion of a regular legislative session, typically published in July/August <https://www.flsenate.gov/Laws/Statutes> (accessed on 2020.01.05).

[745] 760.854 (1).

[746] 760.854 (2).

[747] 760.854 (4).

[748] See Department: 62 <https://www.flrules.org/Gateway/Department.asp?toType=&DeptID=62> (accessed on 2020.01.05).

regulate pollution in Florida.[749] Due to Florida's geographical reality, FAC also provides special regulation for Beaches and Coastal Systems (Chapter 62-B).

With regard to governance and policy, using data on the number of environmental cases opened, sanctioned, and penalised by the Florida Department of Environmental Protection (2005-15), Lynch et al looked to take advantage of a natural experiment in the US state of Florida to explore the influence of anti-environmental governors on environmental enforcement outcomes. The authors witnessed pre- and post-Governor Rick Scott, and results appear to demonstrate, descriptively, the relevant influence that executive actors can have on environmental enforcement outcomes in the state.[750]

With regard to climate change, a bill was recently in the state legislature in March 2019, which would create a Florida Climate and Resilience Research Programme within the Office of Resilience and Coastal Protection. However, the document was indefinitely postponed and withdrawn from consideration, dying in Agriculture and Natural Resources Subcommittee.[751]

5.4.2. Pennsylvania

Environmental law and policy in the State (officially Commonwealth) of Pennsylvania is implemented by the Pennsylvania Department of Environmental Protection (PDEP). Its mission is to protect Pennsylvania's air, land and water from pollution and to provide for the health and safety of its citizens through a cleaner environment. PDEP intends to work as partners with individuals,

[749] Chapter 62-4 FAC includes general DEP permitting requirements applicable to all regulatory programmes: Air, Waste, and Water.

[750] Michael J. Lynch et al, "Executive Actors and Environmental Enforcement: Examining the 'Rick Scott Effect' in the U.S. State of Florida," *Review of Policy Research*, Vol. 36, Issue3 (May 2019), 395-413.

[751] See the status of this bill on the Florida Senate webpage <https://www.flsenate.gov/Session/Bill/2019/1369> (accessed on 2020.01.05).

organizations, governments and businesses to prevent pollution and restore our natural resources.[752]

5.4.2.1. Constitution

The Constitution of the Commonwealth of Pennsylvania is considered as the foundation of the state's government. Its first Constitution was adopted in 1776 and it is considered to have been a framework for the US federal Constitution, which did not take effect until 1789.[753]

In 1971, an amendment thorough Joint Resolution No.3 added present Section 27 to Article I, dedicated to "natural resources and the public estate." This section grants the people "a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment."[754]

In fact, this provision makes environmental and historic protection part of the constitutional purpose of state government, which is something that statutes and regulations cannot do. Citizen rights are an essential part of this provision, but such rights are directed primarily at enforcement of the government's duties. When legislation or administrative regulation provides as much protection as Article I, §27, or even more protection, there is no need for judicial enforcement of the provision. Nevertheless, where legal gaps exist, courts are responsible to enforce the norms of Article I, §27. Courts may also use it to support the

[752] See PDEP homepage <https://www.dep.pa.gov/About/Pages/default.aspx> (accessed on 2020.01.05).

[753] The entire text of Pennsylvania's Constitution is available on the Pennsylvania General Assembly website <https://www.legis.state.pa.us/WU01/LI/LI/CT/HTM/00/00.HTM> (accessed on 2020.01.05).

[754] It is also established that "Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people."

application of other legal rules.[755] In addition, the public trust clause also suggests the need for judicial recognition of several subsidiary rules that reinforce the state's substantive obligations.[756]

The first major judicial case under Article I, §27, was *Commonwealth v. National Gettysburg Battlefield Tower, Inc*. It framed the Amendment as a grant of power to the government to engage in environmental regulation, and not as a limit on government authority. Because of its interpretation, subsequent courts held that the Amendment is not self-executing, being only applicable if the General Assembly says so.[757] In the second major case, *Payne v. Kassab*, the Court expressly substituted a three-part balancing test for the actual text of Article I, §27. This test has demonstrably proven ineffective in protecting public rights.[758] From Dernbach and Prokopchak's perspective, these cases effectively buried the provision of Article I, §27, for four decades.[759]

Other interesting case law regarding environmental rights in Pennsylvania is the case of *Robinson Township v. Commonwealth*. In this case, the court inquired

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[755] John C. Dernbach, "Taking the Pennsylvania Constitution Seriously When It Protects the Environment: Part I - An Interpretative Framework for Article I, Section 27," *Penn State Law Review*, Vol. 103, No. 4 (1999), 693-734.

[756] John C. Dernbach, "Taking the Pennsylvania Constitution Seriously When It Protects the Environment: Part II - Environmental Rights and Public Trust," *Penn State Law Review*, Vol. 104, No. 1 (1999), 97-164.

[757] *Commonwealth v. Nat. Gettysburg B. Tower, Inc.*, 8 Pa. Commw. 231. Apr 3, 1973, 302 A.2d 886 (Pa. Cmmw. Ct. 1973) <https://casetext.com/case/com-v-nat-gettysburg-b-tower-inc> (accessed on 2020.01.05).

[758] *Payne v. Kassab*, 11 Pa. Commw. 14. Nov 21, 1973, 312 A.2d 86 (Pa. Cmmw. Ct. 1973) <https://casetext.com/case/payne-v-kassab-1?q=Payne%20v.%20Kassab&sort=relevance&p=1&type=case&resultsNav=false> (accessed on 2020.01.05).

[759] John C. Dernbach, and Marc Prokopchak, "Recognition of Environmental Rights for Pennsylvania Citizens: A Tribute to Chief Justice Castille," *Duquesne Law Review*, Vol. 53 (2015), 339. See also Franklyn L. Kury, "The Environmental Amendment to the Pennsylvania Constitution: Twenty Years Later and Largely Untested," *Villanova Environmental Law Journal*, Vol. 1 (1990), 123-124.

whether "the petitioner filing suit has demonstrated aggrievement, by establishing 'a substantial, direct and immediate interest in the outcome of the litigation.'"[760]

5.4.2.2. Statutory law and policy

In the Commonwealth of Pennsylvania, it is also possible to find the provision of a number of statutory law and regulations in the environmental field. One example of that is Pennsylvania Air Pollution Control Act (PennAPCA), which intends to "provide for the better protection of the health, general welfare and property of residents by controlling, reducing, and preventing the pollution of the air by smokes, dusts, fumes, gases, odors, mists, vapors, pollens and similar matter (…) and conferring upon persons aggrieved certain rights and remedies."[761]

According to Section 6.1. of PennAPCA, which regulates plans approvals and permits, "The [environmental] department shall provide public notice and the right to comment on all permits prior to issuance or denial and may hold public hearings concerning any permit." The right to appealable actions (to the hearing board) is also conferred to "any person aggrieved by an order or other administrative action of the department issued pursuant to [the] act or any

[760] *Robinson Township v. Commonwealth of Pennsylvania*, Pa. Sup. Ct. No. J-127A-D-2012 (decided PA Dec. 19, 2013) (plurality opinion) <http://www.pacourts.us/assets/opinions/Supreme/out/J-127A-D-2012oajc.pdf?cb=1> (accessed on 2020.01.05). See generally, Erin Daly, and James R. May, "Robinson Township v. Pennsylvania, A Model for Environmental Constitutionalism," *Widener Law Review*, Vol. 21 (2015), 151-170.

[761] See Air Pollution Control Act, Act of Jan. 8, (1960) 1959, P.L. 2119, No. 787 Cl. 35 (Title amended Oct. 26, 1972, P.L.989, No.245) <https://www.dep.pa.gov/Business/Air/BAQ/Regulations/Documents/apca.pdf> (accessed on 2020.01.05).

person who participated in the public comment process for a plan approval or permit" (Section 10.2.).

Other example of statutory legislation within the state legal system of the Commonwealth of Pennsylvania, which is not only related with environmental protection but has major relevance in this area, is the Right-To-Know Law – Enactment, Act of Feb. 14, 2008, No. 3 Cl. 02.[762] This act intends to prove "for access to public information, for a designated open-records officer in each Commonwealth agency, local agency, judicial agency and legislative agency, for procedure, for appeal of agency determination, for judicial review and for the Office of Open Records; imposing penalties; providing for reporting by State-related institutions; requiring the posting of certain State contract information on the Internet; and making related repeals."[763]

It is, therefore, expressly set out by the Right-To-Know Law – Enactment that Commonwealth, local, legislative, and judicial agencies "may not deny a requester access to a public record due to the intended use of the public record by the requester unless otherwise provided by law" (Sections 301-304).

This is, in fact, a concretisation of the provision of a right to information and/or to transparency, which demonstrates that the legislation of Pennsylvania intends to apply to all branches of the public administration, legislative, and judicial authorities, and also to those which act within the environmental scope.[764]

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[762] Right-To-Know Law – Enactment, Act of Feb. 14, 2008, No. 3 Cl. 02 <http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=8156&DocName=RIGHT-TO-KNOW%20LAW%20-%20ENACTMENT.PDF%20%20%3Cspan%20style%3D%22color%3Agreen%3B%22%3E%3C%2Fspan%3E%20%3Cspan%20style%3D%22color%3Ablue%3B%22%3E%3C%2Fspan%3E> (accessed on 2020.01.05).

[763] Right-To-Know Law – Enactment, Act of Feb. 14, 2008, No. 3 Cl. 02.

[764] The act only exempts from the right to know in environmental issues the "the contents of real estate appraisals, engineering or feasibility estimates, environmental reviews, audits or

In addition to what is provided in statutory legislation, other policy and governance solutions should be mentioned. In fact, the establishment of an Office of Environmental Justice, as a point of contact for Pennsylvania residents in low income areas and areas with a higher number of minorities, shows that evolutions in this area cannot exclusively happen through the application of statutory norms or case, but also thorough other solutions. The primary goal of this office is intended to be the increase of communities' environmental awareness and involvement in the PDEP permitting process.[765] And this case is also an evidence of a pursuit for the application of environmental rights.[766]

Regarding climate change, in 2008, the General Assembly adopted Pennsylvania Climate Change Act.[767] This act provides for a report on potential climate change impacts and economic opportunities the Commonwealth, for duties of the PDEP, for an inventory of greenhouse gases, for establishment of the Climate Change Advisory Committee, for a voluntary registry of greenhouse gas emissions and

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evaluations made for or by an agency relative to the following: (A) The leasing, acquiring or disposing of real property or
an interest in real property; (B) The purchase of public supplies or equipment included in the real estate transaction; (C) Construction projects" (Section 708, 22, b, i). Even though, the mentioned paragraph is not applied "once the decision is made to proceed with the lease, acquisition or disposal of real property or an interest in real property or the purchase of public supply or construction project" (Section 708, 22, b, ii).

[765] See more about this office on PDEP website <https://www.dep.pa.gov/PublicParticipation/OfficeofEnvironmentalJustice/Pages/default.aspx > (accessed on 2020.01.05).

[766] Also see the eNOTICE, Pennsylvania Department of Environmental Protection's (PDEP) Electronic Notification System, covering Permit Applications, ACT2 Notices of Intent to Remediate, Regulations updates, and eComment Open Comment Periods, which are processed daily <https://www.ahs.dep.pa.gov/eNOTICEWeb/Default.aspx> (accessed on 2020.01.05).

[767] Act of Jul. 9, 2008, P.L. 935, No. 70, Cl. 27 <https://www.legis.state.pa.us/cfdocs/legis/li/uconsCheck.cfm?yr=2008&sessInd=0&act=70> (accessed on 2020.01.05).

for a climate change action plan. Therefore, after a first version in 2008, a second Climate Action Plan is now in force.[768]

5.4.3. Washington state

Environmental law and policy within the state of Washington is regulated and implemented by the Washington State Department of Ecology, which is an official environmental regulatory agency (usually known simply as "Ecology", and hereby identified as WDE). According to the department's authorising statute, set out in Chapter 43.21A of the Revised Code of Washington (RCW)[769], the WDE administers laws and regulations concerning the areas of water quality (RCW 90.48), water rights and water resources (RCW 90.03), shoreline management (RCW 90.58), toxics clean-up, nuclear waste, hazardous waste, and air quality (RCW 70.94).

Therefore, WDE has authority delegated through federal and state law to implement and enforce various environmental laws and rules, intending to accomplish this through an open and public rulemaking process, and by ensuring compliance with those laws and rules. It also conducts monitoring and scientific assessments.[770]

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[768] The 2018 version: (i) GHG emission and sequestration trends and baselines in the Commonwealth; (ii) evaluates cost-effective strategies for reducing or offsetting GHG emissions; (iii) identifies costs, benefits and co-benefits of reduction strategies recommended; (iv) identifies areas of agreement and disagreement among committee members; and (v) recommends to the General Assembly legislative changes necessary to implement the Action Plan. In addition, the PDEP and Climate Change Advisory Committee are required to update the plan every three years. See the updated version of the Pennsylvania Climate Action Plan on PDEP webpage <https://www.dep.pa.gov/Citizens/climate/Pages/PA-Climate-Action-Plan.aspx> (accessed on 2020.01.05).

[769] This chapter of the RCW is specifically dedicated to the WDE <https://app.leg.wa.gov/RCW/default.aspx?cite=43.21A> (accessed on 2020.01.05).

[770] More information about the WDE is available on its website <https://ecology.wa.gov/About-us> (accessed on 2020.01.05).

5.4.3.1. Constitution

The Constitution of the state of Washington does not proclaim or provide environmental rights. However, it is possible to find such provisions or evidences of them in state statutes, as demonstrated in the following paragraphs.[771]

5.4.3.2. Statutory law and policy

Washington state's environmental statutory laws and rules are categorised in various areas, such as Air & Climate, Water & Shorelines, Waste & Toxics, Spills & Cleanup, Grants & Loans, Administrative, Noise, State Environmental Policy Act (WSEPA).[772]

WSEPA, which was enacted by Washington Legislature in 1971, is considered by the WDE as the state's most powerful legal tool for protecting the environment. It provided Washington's basic environmental charter, and among other rules it requires state and local governments to:

> "Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment" (RCW 43.21C.030, a);

and to ensure that:

> "environmental amenities and values will be given appropriate consideration in decision making along with economic and technical considerations (…)" (RCW 43.21C.030, b).

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[771] See Washington State Legislature <http://leg.wa.gov/LawsAndAgencyRules/pages/constitution.aspx> (accessed on 2020.01.05).

[772] See WDE's website <https://ecology.wa.gov/About-us/How-we-operate/Laws-rules-rulemaking> (accessed on 2020.01.05).

WSEPA policies and goals also intend to supplement existing authorisations for Washington's executive, legislative and judicial branches including state agencies, counties, cities, districts, and public corporations. Moreover, governmental actions may also be conditioned or denied pursuant to WSEPA.

According to the WDE, prior to the adoption of WSEPA, the public had voiced concern that government decisions did not reflect environmental considerations. Public agencies used to respond that there was no regulatory framework enabling them to address environmental issues. After the enactment and entering into force of the National Environmental Policy Act (1969), WSEPA was created and modelled in order to fill this need. This act intends to give agencies the necessary tools to allow to consider and mitigate for the environmental impacts of proposals. Provisions were also included to involve the public, tribal governments, and interested agencies in most review processes prior to a final decision being made.

Following NEPA, the Washington state's statute in this field, which is WSEPA, was also designed to improve agency decision-making and to protect the environment, containing a variety of research, disclosure, and study obligations. Its rules intend to combine "the legislative objectives of full disclosure, consultation, and reasoned decision-making prescribed as the cutting edge of administrative reform."[773]

In fact, the most pronounced difference from NEPA in the WSEPA is the legislative insistence that:

> "each person has a fundamental and inalienable right to a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment" (RCW 43.21C.020, 3).

[773] William H. Rodgers Jr., "The Washington Environmental Policy Act," *Washington Law Review*, Vol. 60 (1984), 33-68.

And this provision is an explicit evidence of a non-constitutional state-created environmental right (expressly defined as fundamental) within the legal system of the state of Washington. In this specific case, at least the right to a healthy environment is legally provided.[774] However, by analysing the Washington's environmental statutory law it is possible to find other provisions connected to environmental rights in RCW and Washington Administrative Code (WAC), such as those ensuring public participation and consultation, e.g. under the framework of environmental impact assessment and its final statement.[775]

With regard to climate issues, WDE adopted in 2012 a climate change response strategy, named "Preparing for a Changing Climate: Washington State's Integrated Climate Response Strategy."[776] It offers recommendations on how existing state policies and programs can better prepare Washington State to respond to the impacts of climate change. The strategy also urges state agencies to make adaptation a standard part of agency planning and to make scientific information about climate change impacts accessible to public and private-sector decision makers. It also recommends that state agencies strengthen existing efforts to help local and tribal governments, private and public organizations, and individuals reduce their vulnerability to climate change. The response

[774] On the protection of this "fundamental and inalienable right to a healthful environment," also see state court judgements such as *Nisqually Delta Association v. City of Dupont*, 95 Wn.2d 563, 627 P.2d 956 (1981) <https://law.justia.com/cases/washington/supreme-court/1981/47358-7-1.html> (accessed on 2020.01.13); *ASARCO, Inc. v. Air Quality Coalition*, 92 Wn.2d 685, 601 P.2d 501 (1979) <https://casetext.com/case/asarco-v-air-quality-coalition> (accessed on 2020.01.10); *Save a Valuable Environment v. City of Bothell*, 89 Wn.2d 862, 576 P.2d 401 (1978) <http://courts.mrsc.org/supreme/089wn2d/089wn2d0862.htm> (accessed on 2020.01.10); *Leschi Improvement Council v. Washington State Highway Commission*, 84 Wn.2d 271, 525 P.2d 774 (1974) <https://casetext.com/case/leschi-v-highway-commn> (accessed on 2020.01.10).

[775] See the examples of RCW 43.21C.031 (significant impacts) or WAC 197-11-410 (expanded scoping). On this issue, also see Washington State Department of Ecology, *State Environmental Policy Act Handbook* (Olympia WA: Department of Ecology, 2003) <https://fortress.wa.gov/ecy/publications/documents/98114.pdf> (accessed on 2020.01.05).

[776] The strategy can be consulted on the Department's webpage <https://ecology.wa.gov/Air-Climate/Climate-change/Climate-change-the-environment> (accessed on 2020.01.05).

strategy underscores the need to build strong partnerships to support state, local, and tribal adaptation; coordinate activities across sectors; and engage stakeholders and the public.

In the area of the reduction of GHG, the State Agency Climate Leadership Act of 2009 and 2015 requires some state agencies to reduce their greenhouse gas emissions below 2005 levels, as follows: (i) 15 percent by 2020; (ii) 36 percent by 2035; and (iii) 57.5 percent by 2050, or 70 percent below expected emissions that year.[777]

6. The experience of soft law

A reference to soft law experiences should be made at this point. In fact, non-conventional legal or regulatory solutions have been used recently, and specifically in environmental law, with the goal of promoting more flexible and adaptive frameworks.

Soft law ("*weiches Völkerrecht*" in German or "*droit mou*", "*droit vert*", "*pré-droit*", "*droit vague*" and "*droit doux*" in French) arose by opposition to "hard law" ("*droit dur*").[778] It has, therefore, been used by the means of legal instruments issued and approved in the scope of a myriad of different branches, such as International Law, Financial Law, Commercial Law, Competition Law, or Environmental Law.

Enthusiasts of these more flexible and adaptive instruments argue that:

> "the soft law approach offers many advantages: timely action when governments are stalemated; bottom-up initiatives that bring additional

[777] RCW 70.235.050 and 060 <https://apps.leg.wa.gov/RCW/default.aspx?cite=70.235.050> (accessed on 2020.01.05).

[778] See K.C. Wellens and G.M. Borchardt, "Soft Law in European Community Law," in *European Law Review*, Vol. 14 (1989), 267-321, 271, note no. 9. Also see Gregory C. Shaffer and Mark A. Pollack, "Hard vs. Soft Law: Alternatives, Complements and Antagonists in International Governance," in *Minnesota Law Review*, Vol. 94, No. 3 (2010), 706-799.

> legitimacy, expertise, and other resources for making and enforcing norms and standards; and an effective means for direct civil society participation in global governance."[779]

In effect, after analysing all legal frameworks above mentioned, it is possible to find in the roles of the federal or state agencies which are responsible to regulate and implement environmental protection the increase of soft law instruments, such as policy declarations, codes of conduct, codes of good-practices, codes of ethics, recommendations, or guidelines.[780]

These instruments are simpler to modify and to adapt (by specialised agencies) and demonstrate to be clear and easier to read, understand, and interpret by different stakeholders who must comply with environmental norms and principles. However, soft law has usually been dedicated to more technical norms. Its specific characteristics are hardly able to be compatible with a constitutional (or hard law) provision of environmental right. On the contrary, these more recent instruments can absolutely play an extremely important role for a more effective implementation of those rights, which material content must naturally be provided by hard law.

7. A right to urban social-ecological resilience?

As Salzman and Thompson assert, the rights discussed here are anthropocentric, given that they address the rights of current and future generations of humans to a healthy and liveable environment, however that might be defined. They do not intend to protect the natural functioning of other living organisms, ecosystems,

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[779] John J. Kirton and Michael J. Trebilcock (eds.), *Hard choices, soft law: Voluntary standards in global trade, environment and social governance* (Aldershot, UK: Ashgate, 2004), 5.

[780] For the EU <https://www.eea.europa.eu/>; for Denmark <https://eng.mst.dk/>; for Hungary <http://neki.gov.hu>; for Portugal <http://apambiente.pt/>; for the US <https://www.epa.gov/>; for Florida <https://floridadep.gov/>; for Pennsylvania <https://www.dep.pa.gov/>; and for Washington <https://ecology.wa.gov/> (all accessed on 2020.01.06).

and perhaps nature more generally.[781] Therefore, making use of these rights only addresses the need of protecting of individuals and social systems, but not the balance or even the resilience of ecological systems.[782]

After the analysis of the different regimes, both in the EU and the US, this is an opportunity to discuss the possibility of sustaining a right to social-ecological resilience, based on this connection between social systems and ecosystems. In this sense, it could be a right particularly dedicated to the reality of cities, as an adaptation to modern times of Lefebvre's original right to the city, taking into account that we are living an era of uncertainty in cities. Its content might be the ability of individuals and communities to be granted the capacity to adapt to the external disturbances and be capable of evolving, maintaining their identity, such as under the ideas of resilience thinking.[783] However, could it play a relevant role in order to achieve resilience justice in cities?

In fact, after analysing the provision of environmental rights in different legal realities, it is possible to understand that the specific heralding of those rights in constitutional, infra-constitutional or even local systems not always is sufficient to ensure that protection. Therefore, the addition of another right to legal systems would only make catalogues of environmental rights longer. And it is not clear that this creation would improve people's and species' resilience, therefore of both social systems and ecosystems.

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[781] Salzman and Thompson, *Environmental Law and Policy* (2014), 188.

[782] As Palmer and Ruhl recognise, "the ability of ecosystems to support humans in the future will increasingly rely on both creative environmental interventions and ecological restoration, efforts to clearly distinguish between the two in legal and management contexts are essential." See Margaret A. Palmer, and J.B. Ruhl, "Aligning restoration science and the law to sustain ecological infrastructure for the future," *Frontiers in the Ecology and the Environment*, Vol. 13, Issue 9 (2015), 512-519.

[783] Walker and Salt, *Resilience Thinking* (2006); Walker and Salt, *Resilience Practice* (2012).

8. Conclusive synthesis

The relevance of environmental rights, from different perspectives, at international, regional, state levels, and some local references was discussed in this chapter. A brief and rather humble identification of different possible classifications was presented, with the intent of finding evidences that disparate legal systems may provide, in different ways, norms and principles which aim to protect the environment and the citizens (and their communities) living in certain territories.

Facing different legal traditions, such as Roman and German influenced Civil Law or British and American influenced Common Law, it is complex to find absolute isometric similarities or distinctions. In effect, the aim of this work was again not to develop a comparative study, but only to demonstrate and to map some possible paradigmatic examples on both sides of the Atlantic, from federal or supranational and state or Member State perspectives, on how environmental law can deal with rights and what mechanisms it uses to protect them.

The effectiveness of environmental rights can be questioned in some cases, especially when they are enshrined by constitutions and not so effectively provided in statutory law or implemented in practice. On the other hand, some examples can be presented of situations where constitutions do not provide environmental rights, but ordinary statutory law enshrines the protection of those rights, such as the case of Washington state.

These differences and the problems resulting from them are some the main motivations for this dissertation and it also is the reason why the element of resilience justice will be hereby introduced, as a complementary way of finding an effective protection of those rights, especially for those people who find them more difficult to be protected.

Chapter IV – Environmental rights for resilience justice

1. From sustainability to resilience: a turning point

Departing from the premises presented in the paragraphs above, it is possible to argue that environmental law and governance can also be framed from a resilience justice perspective. The arguments will be presented below.

In fact, since the 1970s and until the turn of the twenty-first century, environmental management, policy and even law have been based on what Benson and Craig label of "sustainability narrative".[784] According to these authors, the term "sustainability", in its most general definition, "refers to the long-term ability to continue to engage in a particular activity, process, or use of natural resources."[785]

As Salzman and Thompson argue, economic development has long been a defining goal of governments. It has been considered fundamental to ending poverty in the developing world and raising standards of living worldwide. Nevertheless, at the same time, most developed countries have sought to maximise economic growth within their own borders. Moreover, as global warming, loss of biodiversity, crashing fisheries, ozone depletion, and other environmental crises demonstrate, the current pace and manner of economic expansion may be incompatible with environmental protection.[786]

The sustainable development narrative demonstrated the confirmation of two realities: that human beings cannot consider environmental, economic, and social issues in isolation, and also that inter- and intragenerational justice must be always considered when crafting policy approaches.[787] Nevertheless, it was also

[784] Benson and Craig, *The End of Sustainability* (2017), 33-47.

[785] Benson and Craig, *The End of Sustainability* (2017), 33.

[786] Salzman and Thompson, *Environmental Law and Policy* (2014), 36-38.

[787] Benson and Craig, *The End of Sustainability* (2017), 35.

used as an excuse to continue grounding consumerism, but now under a "green" label.[788]

Moreover, in the intersection of the sustainability narrative with the phenomena of climate change, Burger et al verified that

> "sustainability has failed (and was designed to fail) to compel the radical transformation at the core of the countercultural social movement that invented modern environmental politics. Rather than inspire changes in the way we live necessary to actually redress the environmental crisis, the sustainability story brackets big-ticket items like capitalism and consumerism, reifies existing actors and hierarchies, and affirms patterns of social organization, production, and consumption. In short, it is a deceptive story that perpetuates existing power dynamics that are in many respects the cause of climate change."[789]

Based on this reality, The World Conservation Union, currently named International Union for Conservation of Nature (IUCN) acknowledged in 2006 that "the evidence is that the global human enterprise [is] rapidly becoming *less* sustainable and not more"[790], adding that the meaning of sustainable development is still not clear, always involving trade-offs and different metrics.[791]

In addition to the position published by the IUCN, the IPCC alerted in 2014, that "[c]limate change poses a moderate threat to current sustainable development

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[788] Adrian Parr, *Hijacking Sustainability* (Cambridge, MA: MIT Press, 2009), 15-32.

[789] Michael Burger et al, "Rethinking Sustainability to Meet the Climate Change Challenge," *Environmental Law Reporter*, Vol. 43 (April 2013), 10356.

[790] W.M. Adams, *The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century*, IUCN – The World Conservation Union (22 May 2006), 3 <https://cmsdata.iucn.org/downloads/iucn_future_of_sustanability.pdf> (accessed on 2020.01.05).

[791] Adams, *The Future of Sustainability* (2006), 3-4.

and a severe threat to future sustainable development."[792] And even reputed sustainable development advocates, such as Sachs, acknowledge that "all of our civilization – the location of our cities, the crops that we grow, and the technologies that run our industry – is based on a climate pattern that will soon disappear from the planet."[793]

Rockström and Klum, two researchers from the Stockholm Resilience Centre who have worked on the concept of planetary boundaries, explain that

> "the groundwork for the planetary boundaries concept rests on more than 30 years of empirical research showing that ecosystems, from local lakes to forest biomes and large ice sheets, can abruptly cross tipping points and irreversibly shift from one stable state to another."[794]

And from Benson and Craig's perspective,

> "The reality of the Anthropocene is that, as planetary systems alter and transform, we will increasingly have only the most tenuous of ideas of how 'sustainable' our uses of the planet and its resources might be. The disjunction between the sustainability narrative and our new reality calls for a replacement cultural narrative – (…) we need a better framework for thinking about our evolving relationship to nature, one that encompasses change and unpredictability as our new normal."[795]

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[792] IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2014), 1104 <http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap20_FINAL.pdf> (accessed on 2020.01.05).

[793] Sachs, *The Age of Sustainable Development* (2015), 40.

[794] Johan Rockström and Mattias Klum, *Big World, Small Planet: Abundance within Planetary Boundaries* (New Haven, CT: Yale University Press, 2015), 60.

[795] Benson and Craig, *The End of Sustainability* (2017), 47.

It must be a resilience-based narrative, which goes further than the simple idea of making environmental, social and economic systems sustainable, enhancing and supporting social-ecological systems' resilience.[796]

2. The need to enhance resilience justice

2.1. Background

In order to understand the concept of resilience justice, it is essential to introduce its background. Resilience theorists, such as Holling, define ecological resilience as "the capacity of a system to absorb and still retain its basic function and structure."[797]

However, a more complete definition of ecological resilience is that suggested by Walker and Salt, presenting it as

> "the capacity of a system to absorb a spectrum disturbance and reorganize so as to retain essentially the same function, structure, and feedbacks – to have the same identity."[798]

In fact, what is here in analysis is a capacity of systemic response to disturbances, underscoring systems' absorption and adaptation to changes and disturbances, as well as how to resist and shrug them off. A highly important element of ecological resilience is the capacity for self-organisation, which encompasses the system's development of stabilising feedbacks among its components and maintain its existence and identity.[799]

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[796] Arnold, "Environmental Law, Episode IV: A New Hope?" (2015), 7.

[797] Holling, "Resilience and Stability of Ecological Systems" (1973), 1.

[798] Walker and Salt, *Resilience Practice* (2012), 3.

[799] Benson and Craig, *The End of Sustainability* (2017), 58.

As it happens to every possible approach or framework, also in this case a certain number of critics ask what kind of resilience, systems, disturbances and for whom resilience approaches are applied. Therefore, resilience is sometimes labelled as being a "buzzword", rather agreeable or "fuzzy", having contested and confused meanings or even as a simple conceptual approach for apparently supporting some neoliberal ideologies or approaches.[800]

A highly relevant obstacle to the efforts of adaptation to climate change is the assurance of justice, both in the application of law and the organisation of a society. And the main reason for that is because the most vulnerable and marginalised communities are those who suffer the largest negative impacts of uncertainty and unpredicted environmental phenomena. In fact, the vulnerabilities of different communities and territories regarding climate change are very often the result of a number of combinations of various factors and elements, such as few resources, little political power, location, disabilities, discrimination, and insufficient natural capital (e.g., ecosystem services) and/or social capital (e.g., trust, cooperation, shared information).[801]

In effect, several researchers have been demonstrating that the overall capacity of social-ecological-institutional systems to adapt can be even improved when

[800] Idowu Ajibade, "Can a future city enhance urban resilience and sustainability? A political ecology analysis of Eko Atlantic city, Nigeria," *International Journal of Disaster Risk Reduction*, Vol. 26 (December 2017), 85-92; Ksenia Chmutina et al, "Unpacking resilience policy discourse," *Cities*, Vol. 58 (2016), 70-79; Paul O'Hare and Iain White, "Deconstructing Resilience: Lessons from Planning Practice," *Planning Practice & Research*, Vol. 28, Issue 3 (2013), 275-279; Libby Porter, and Simin Davoudi, "The Politics of Resilience for Planning: A Cautionary Note," *Planning Theory & Practice*, Vol. 13, Issue 2 (2012), 329-333.

[801] Arnold, "Adaptive Law" (2018), 185. See also generally Sumudu Atapattu, *Human Rights Approaches to Climate Change: Challenges and Opportunities* (Abingdon: Routledge, 2016); Susan L. Cutter et al, "Social Vulnerability to Environmental Hazards," *Social Science Quarterly*, Vol. 84 (2003), 242-261; Alice Kaswan, "Domestic Climate Change Adaptation and Equity," *Environmental Law Reporter*, Vol. 42 (December 2012), 11125- 11143.

that capacity is also used to address social injustices, as well as to empower the roles of the most marginalised communities.[802]

2.1.1. Influence of the environmental justice movement

One of the most usual frameworks used in studies and approaches which intend to improve the lives of communities and their relationship with the territories where they inhabit, and the ecosystems in those territories, is environmental justice.

Following a series of empirical studies indicating that minorities communities were more likely to live in proximity to heavy industry facilities, the US Environmental Protection Agency (EPA) adopted the following definition of environmental justice:

> "Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, colour, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.
>
> Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental and commercial operations or policies."[803]

In fact, literature regarding "environmental justice" was based on grassroots movements, which intended to give broader voice to poor, oppressed, or

[802] Arnold, "Legal Castles in the Sand" (2011), 213-260; Chaffin et al, "Resilience, Adaptation, and Transformation in the Klamath River Basin Social-Ecological System" (2014), 157-193.

[803] The concept of "meaningful involvement" means that: (a) people have an opportunity to participate in decisions about activities that may affect their environment and/or health; (b) the public's contribution can influence the regulatory agency's decision; (c) their concerns will be considered in the decision-making process; and (d) the decision-makers seek out and facilitate the involvement of those potentially affected. See also Bell et al, *Environmental Law* (2017), 74-76.

minorities communities. These theories have usually concerned land-use or environmental issues and the need of better decision or law-making solutions for those problems. For that, the environmental justice movement has tried to apply legal norms and other protocols to protect already-marginalised communities from their "fair share" of environmental harms and burdens.[804]

The scope of the environmental justice movement has expanded over time. Very often policy and legal solutions have been reaching modest results regarding wilderness protection, species preservation and other clean air and water goals. However, policies and laws have rarely benefited traditionally low-income, disadvantaged, and marginalised communities. For this reason, environmental justice activists usually distrust law and legal institutions. They often consider with somewhat reservation law reforms, litigation, and "rights", as strategic solutions to be employed. And this is the argument based on why legal literature needs to think more critically about this "rights-talk", its utility for advancing environmental justice, and how it can work. The solution suggested by scholarship, and also supported by legal instruments such as the Aarhus Convention, is that decision- and lawmakers must learn to listen to what communities living in a given territory already know and what they intend to accomplish.[805]

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[804] Dayna Nadine Scott, "Environmental justice and the hesitant embrace of human rights," in James R. May, and Erin Daly (eds.), *Human Rights and the Environment: Legality, Indivisibility, Dignity and Geography*, Elgar Encyclopedia of Environmental Law, Vol. VII (Cheltenham: Elgar, 2019), 447.

[805] Scott, "Environmental justice and the hesitant embrace of human rights" (2019), 448. Also see Alexandra Aragão, "Direito fundamental de participação cidadã em matéria ambiental: o papel dos serviços dos ecossistemas," *Debater a Europa*, no. 21 (2019), 55-66 <https://impactum-journals.uc.pt/debatereuropa/article/view/6546> (accessed on 2020.01.05); Lee Godden, "Community participation: exploring legitimacy in socio-ecological systems for environmental water governance," *Australasian Journal of Water Resources*, Vol. 23, Issue 1 (2019), 45-57; Lorenzo Squintani and Goda Perlaviciute, "Access to Public Participation: Unveiling the Mismatch Between What Law Prescribes and What the Public Wants," in Marjan Peeters and Mariolina

The idea of environmental justice, in this context of rights and the environment, implies a fair outcome in environmental decision-making and the absence of discrimination in facility-siting. Nevertheless, it is also a social movement, which intends to focus critically on the dynamics that generate an unfair distribution of environmental benefits and burdens.[806]

This approach means understanding how differences in wealth and power, inscribed through unequal and complex social processes can produce disparities in the mentioned environmental benefits and burdens.[807] Under this lens, voices of low-income, marginalised, and indigenous communities are more easily amplified and empowered in environmental and resource decision-making venues across the southern hemisphere, as well as in the usually considered "South of the North."[808]

Eliantonio (eds.), *Research Handbook on EU Environmental Law* (Cheltenham: Edward Elgar, 2020) [forthcoming], University of Groningen Faculty of Law Research Paper No. 24/2019 (June 11, 2019) <https://ssrn.com/abstract=3402440> (accessed on 2020.01.05); Leeann Sullivan, "Conservation in Context: Toward a Systems Framing of Decentralized Governance and Public Participation in Wildlife Management," *Review of Policy Research*, Vol. 36, Issue 2 (March 2019), 242-261; Matthijs Hisschemôller, Rob Hoppe. William N. Dunn, and Jerry R. Ravetz (eds.), *Knowledge, Power, and Participation in Environmental Policy* (Abingdon: Routledge, 2017). Regarding the inclusion of public participation as a principle in future environmental frameworks in the post-Brexit UK, see Maria Lee and Eloise A.K. Scotford, "Environmental Principles After Brexit: The Draft Environment (Principles and Governance) Bill" (January 25, 2019), 3, 9-10 <https://ssrn.com/abstract=3322341> (accessed on 2020.01.05).

[806] Dayna Nadine Scott, "Environmental Justice," in David Coghlan, and Mary Brydon-Miller (eds.), *The SAGE Encyclopedia of Action Research* (London: SAGE, 2014), 299-302.

[807] See Laura Pulido, "A Critical Review of the Methodology of Environmental Racism Research," *Antipode*, Vol. 28, Issue 2 (1996), 142-159; and Dayna Nadine Scott and Adrian A. Smith, "'Sacrifice Zones' in the Green Energy Economy: Towards and Environmental Justice Framework," *McGill Law Journal*, Vol. 62, Issue 3 (2017), 861-898.

[808] Shawkat Alam, Sumudu Atapattu, Carmen G. Gonzalez and Jona Razzaque (eds.), *International Environmental Law and the Global South* (Cambridge: Cambridge University Press, 2015). On the concept of the "South of the North," Maldonado states that the terms Global North and Global South "give social, political and economic unity to a very heterogeneous reality." He argues that they nevertheless are useful because (among other reasons) they bring to mind a conceptual map that is both "territorialised and racialised" and thus convey a meaning that we can inscribe *within*

The environmental justice movement has drawn inspiration from the grassroots struggles of residents of "sacrifice zones", affected by pollution, contamination, and toxic waste, often located downwind and downstream of large industrial complexes of extraction, refining and petrochemical production.[809] These people are very often members of low-income communities, who can work together to begin talking with their neighbours, comparing symptoms and compiling records.[810]

Agyeman, Bullard, and Evans popularised the concept of "just sustainabilities." This idea argues that focus should not only be on the distribution of risks, but also on the prevention. Moreover, instead of simply enacting the NIMBY (not-in-

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the categories as well. See Daniel Bonilla Maldonado, "The Political Economy of Legal Knowledge," in Colin Crawford and Daniel Bonilla Maldonado (eds.), *Constitutionalism and the Americas* (Cheltenham: Edward Elgar, 2018), 29-78. See also Amar Bhatia, "The South of the North: Building on Critical Approaches to International Law with Lessons of the Fourth World," *Oregon Review of International Law*, Vol. 14 (2012), 131-175 <https://digitalcommons.osgoode.yorku.ca/cgi/viewcontent.cgi?article=3536&context=scholarly_works> (accessed on 2020.01.05); Carmen G. Gonzalez and Sumudu Atapattu, "International Environmental Law, Environmental Justice, and the Global South," *Transnational Law and Contemporary Problems*, Vol. 26 (2017), 229-242 (on the "South in the North").

[809] Steve Lerner, *Sacrifice Zones: The Front Lines of Toxic Chemical Exposure in the United States* (Cambridge, MA: MIT Press, 2010). See also Robert Bullard, *Dumping in Dixie: Race, Class, and Environmental Quality* (Boulder, CO: Westview Press, 1990).

[810] See especially Phil Brown, "Popular Epidemiology Revisited," *Current Sociology*, Vol. 45, Issue 3 (1997), 137-156; Giovanna Di Chiro, "Environmental justice from the grassroots: Reflections on history, gender, and expertise," in Daniel Farber (ed.), *The Struggle For Ecological Democracy: Environmental Justice Movements In The United States* (New York: Guilford, 1998), 104-136; Luke W. Cole and Sheila R. Foster, *From the Ground Up: Environmental Racism and the Rise of the Environmental Justice Movement* (New York: NYU Press, 2001); Dayna Nadine Scott, "Confronting Chronic Pollution: A Socio-Legal Analysis of Risk and Precaution," *Osgoode Hall Law Journal*, Vol. 46, Issue 2 (2008), 293-343; and Peggy M. Shepard et al, "Advancing Environmental Justice through Community Based Participatory Research," *Environmental Health Perspectives*, Vol. 110, Supplement 2 (April 2002), 139-140.

my-back-yard) syndrome, they stated that people should be looking for answers that reject toxics everywhere (NIABY, or not-in-anyone's-back-yard).[811]

2.1.2. Climate justice as an additional motivation

For Posner and Weisbach, from an international perspective, climate justice is based on welfarism and deontology. In this sense, wealthy nations have ethical duties regarding the poor ones.[812]

Liberal democratic societies usually assume that justice owes its validity to continuing procedures of democratic justification. Here, the degree to which procedures for addressing climate change issues have secured credibility through an intersubjective justification process is important.

The understanding is that all conceptions of justice have been accounted for and reviewed through procedures of intersubjective reflection and public debate before a fully valid and discursively grounded "reflective equilibrium" [813] is established on justice principles.[814]

Distinguishing ideal from non-ideal conditions of justice allows Rawls and, in different ways, Habermas, to demonstrate how a valid justice, including a valid

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[811] Julian Agyeman et al, *Just Sustainabilities: Development in an Unequal World* (Cambridge, MA: MIT Press, 2003). For all, see also Scott, "Environmental justice and the hesitant embrace of human rights" (2019), 447-450.

[812] Posner and Weisbach, *Climate Change Justice* (2010), 169-188.

[813] The "original position" for Rawls is a procedural interpretation of Kant's conception of autonomy and relates specifically to "our nature" as free and reasonable beings acting according to principles of justice. The original position is thought to allow for a "reflective equilibrium" in which one reviews and revises one's own judgments about justice before the latter are tested socially and assessed as to their suitability as elements of a viable, socially grounded model of justice. See John Rawls, *A Theory of Justice (Revised Edition)* (Cambridge, MA: Harvard University Press. 1999), 255.

[814] T. Skillington, *Climate Justice and Human Rights* (2017), 41.

justice on climate change, should remain an unfinished and socially situated project open to re- interpretation, critique, and reform.[815]

Therefore, not all ideas of justice embedded in pluralist contemporary societies directly become suitable or permanent foundations for a well-ordered institutionalised framework for justice on climate change. The ideas of justice which are articulated in relation to climate change and its humanitarian effects need to show a reciprocal quality through procedures of public justification if they are to preserve their validity in wider social currency.[816]

Therefore, justice that prevails today in relation to the distribution of the burdens of global climate change have also been achieved because of a certain reciprocal and fair communication. Nevertheless, whether all ideas of justice on climate change have been considered in terms of their appropriateness as foundations for a well-ordered framework for future climate justice is open to critical interpretation.[817]

Beyond scholarly thinking, the UN has been playing a paramount role in this field, in response to deteriorating resource conditions and the access to them, rising poverty, and the threat of resource led conflict. Transnational civil society actors have also been campaigning for greater public control over decision-

[815] Habermas criticises Rawls for leaning too heavily on a 'weak form of enlightened tolerance' and for avoiding strong truth claims that could conflict with the claims of 'comprehensive doctrines'. See Jürgen Habermas, "A Genealogical Analysis of the Cognitive Content of Morality," in Ciaran Cronin and Pablo De Greiff (eds.), *The Inclusion of the Other* (Cambridge, Mass.: MIT Press, 1998), 3-48. Rawls pleas for "reasonableness" are said to amount to a surrender of the concept of the truth to the greater power of traditional doctrines. Instead, Habermas promotes "a reconstructive proceduralist approach" of the question of morality and law, one conscious of the necessity of debates over the concept of reason and autonomy, especially when the main content of rational discourse cannot be predicted in advance.

[816] Rainer Forst, "Transnational Justice and Democracy: Overcoming Three Dogmas of Political Theory," in Eva Erman and Sofia Näsström (eds.), *Political Equality in Transnational Democracy* (New York: Palgrave Macmillan, 2013), 41-59.

[817] Skillington, *Climate Justice and Human Rights* (2017), 42.

making on questions that affect the future of mankind and the planet as a whole and the right of all to a safe ecological future.[818]

2.1.3. Justice and environmental rights

When analysing concepts of justice, Aristotle is a reference to be recalled. The Greek philosopher distinguished two different but related senses of "justice." They should be universal or particular. Moreover, both of which play a relevant role in his constitutional theory.[819]

The universal concept of "justice" is understood as "lawfulness." It is also related to the common advantage and happiness of the political community.[820] This mentioned conception of universal justice supports the distinction between constitutions which can be considered as correct (just) and deviant (unjust). Justice therefore involves an advantage of all citizens, such as claims to property and or education.[821]

On the other hand, from a particular (as opposed to universal) perspective, "justice" is understood as "equality" or "fairness." This perspective can also

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[818] The recent Chile-Madrid COP 25, in December 2019, was an example of how these actors, such as NGOs or other non-party stakeholders, can be present in important discussions about the future of the Planet and actively contribute with solutions that can make the difference. More information about this issue is available on the COP 25 webpage <https://unfccc.int/process-and-meetings/parties-non-party-stakeholders/non-party-stakeholders/overview/overview/participation-and-engagement-in-cop-25> (accessed on 2020.01.05). The mobilization efforts of these climate justice actors have helped to bring greater scrutiny to bear on the most relevant 'who', 'what' and 'how' aspects of justice deliberation. On this issue, see Skillington, *Climate Justice and Human Rights* (2017), 43-44.

[819] See Scott, "Environmental justice and the hesitant embrace of human rights" (2019), 450.

[820] See Aristotle, *The Nicomachean Ethics (Oxford: Oxford University Press, 2009)*, V.1.1129b11-19; and Aristotle, *Politics* (Oxford: Oxford University Press, 1995), III.12.1282b16-17. On happiness and even the possibility of formulating a right to happiness, see in Portuguese, Saul Tourinho Leal, *Direito à Felicidade* (Coimbra: Almedina, 2017).

[821] Aristotle, *Politics*, III.9.1329a23-4, and 13.1332a32-8.

include distributive justice, according to which different individuals have just claims (or rights) to shares of an asset that is common.

In fact, Aristotle analyses arguments for and against different constitutions as disparate applications of the principle of distributive justice.[822] He argued that justice involves treating equal persons equally and treating unequal persons unequally. However, people do not agree on the standard by which individuals are deemed to be equally meritorious. For him, within the analysis of distributive justice, it requires that benefits be distributed to individuals in proportion to their merit or desert. Aristotle considered that "the good life is the end of the city-state", being a life consisting of noble actions.[823] This means that the correct conception of justice would assign political rights to those who make a full contribution to the political community, with virtue as well as property and freedom (an "aristocratic" constitution).[824]

Environmental law scholarship increasingly employs human rights language.[825] For example, from Bratspies' perspective, "there is a growing sense that the goal of realising human rights necessarily entails protecting the environment."[826] The discourse regarding the right to a healthy environment is useful for the way it

[822] Aristotle, *Politics,* III.9.1280a7-22.

[823] Aristotle, *Nicomachean Ethics*, V.3, 1280b39-1281a4.

[824] Aristotle, *Nicomachean Ethics*, V.3, 1281a4-8.

[825] See the examples of Neil A. F. Popovic, "Pursuing Environmental Justice with International Human Rights and State Constitutions," *Stanford Environmental Law Journal*, Vol. 15 (1996), 338; Lynda Collins, "The United Nations, human rights and the environment," in Anna Grear and Louis J. Kotzé (eds.), *Research Handbook on Human Rights and the Environment* (2015), 219-244; Lavanya Rajamani, "The Increasing Currency and Relevance of Rights-Based Perspectives in the International Negotiations on Climate Change," *Journal of Environmental Law*, Vol. 22, No. 3 (2010), 391-429; John H. Knox, *Report of the Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment: Framework Principles*, United Nations Human Rights Council, A/HRC/37/59 (January 24, 2018) <https://ssrn.com/abstract=3148450> (accessed on 2020.01.05).

[826] Rebecca Bratspies, "Do We Need A Human Right to a Healthy Environment?," *Santa Clara Journal of International Law*, Vol. 13, No. 1 (2015), 35.

motivates lawmakers to bring the environment to the foreground as they "create, interpret, and enforce law."[827] For her, recognising a right to a healthy environment transforms environmental protection from one *aim* of government (among many competing aims), into an *obligation* on government to "respect, protect, and fulfil" this right.[828] On a similar approach, Peel and Osofsky describe the rise of rights talk in climate litigation. From their perspective, courts may be influenced by the idea of fundamental rights violations when they interpret open-ended concepts in legislation, such as considering "the public interest." Here, environmental justice claims framed in human rights language are more likely to be successful, even if not invariably winning, based strictly on an acknowledgement of the "right" itself.[829] Other literature defend the constitutionalisation of environmental rights may result in the judicial application of the "standstill" principle, or the principle of non-regression in the environmental law context,[830] which is based on the idea of "progressive realisation."[831] Existing environmental laws must be treated as a baseline for justice and they can only be strengthened, but never weakened.

Nevertheless, for Boyd it is hard to imagine how achieving a "right to a healthy environment" on paper could promptly improve longstanding or persisting

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[827] Bratspies, "Do We Need A Human Right to a Healthy Environment?" (2015), 67. See also Jacqueline Peel and Hari M. Osofsky, "A Rights Turn in Climate Change Litigation?," Transnational Environmental Law, Vol. 7, Issue 1 (March 2018), 37-67, arguing that human rights are an "interpretive aid" to undefined statutory terms and obligations.

[828] Bratspies, "Do We Need A Human Right to a Healthy Environment?" (2015). See also John G. Merrills, "Environmental Rights," in Daniel Bodansky et al (eds.), *The Oxford Handbook of International Environmental Law* (2007).

[829] Peel and Osofsky, "A Rights Turn in Climate Change Litigation?" (2018), 59.

[830] Lynda M. Collins and David R. Boyd, "Non-Regression and the Charter Right to a Healthy Environment," *Journal of Environmental Law & Practice*, Vol. 29 (2017), 285.

[831] Sundhya Pahuja, "Rights as Regulation: The Integration of Development and Human Rights," in Bronwen Morgan (ed.), *The Intersection of Rights and Regulation: New Directions in Sociolegal Scholarship* (Aldershot: Ashgate, 2007), 167-191 <https://ssrn.com/abstract=1618646> (accessed on 2020.01.05).

issues such as disparities in access to clean drinking water.[832] Therefore, the provision of environmental rights would not be enough to implement justice in this area. In addition to this idea, Bratspies concludes that embracing human rights may lead to "unrealistic or overly lofty expectations of immediate transformation."[833]

With regard to disparities between the provision of environmental rights and the implementation of environmental justice, the right to water enshrined in South Africa's post-apartheid constitution[834] is a clear example, because it has yet to overcome problematic race-based inequities in water distribution.[835]

In effect, a large number of human rights norms "do not purport to provide an egalitarian agenda."[836] And scholarship on environmental law still needs to pay

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[832] As Boyd states, it is "not a magic wand that would instantly solve Canada's complex challenges." He has meticulously documented, however, the experience of other global North states following the constitutionalizing of environmental rights and has demonstrated convincingly that "rights" are and important tool for beginning to make progress on longstanding and persistent issues. See David R. Boyd, "Enshrine our right to clear air and water in the Constitution," Policy Options (2014) <https://policyoptions.irpp.org/fr/magazines/second-regard/boyd-macfarlane/> (accessed on 2020.01.05).

[833] Bratspies, "Do We Need A Human Right to a Healthy Environment?" (2015), 31; and David Kennedy, "The International Human Rights Movement: Part of the problem?," *Harvard Human Rights Journal*, Vol. 15 [iii] (Spring 2002), 101.

[834] Article 27(1)b <https://www.justice.gov.za/legislation/constitution/SAConstitution-web-eng.pdf> (accessed on 2020.01.05). On these issues in the reality of South Africa, see Dianne Scott, and Catherine Oelofse, "Social and environmental justice in South African cities: including 'invisible stakeholders' in environmental assessment procedures," *Journal of Environmental Planning and Management*, Vol. 48, Issue 3 (2005), 445-467.

[835] See, for example, Patrick Bond and Jackie Dugard, "The case of Johannesburg water: what really happened at the pre-paid 'Parish pump'," *Law, Democracy, and Development*, Vol. 12 (2008), 1; and Karen Bakker, "The 'Commons' Versus the 'Commodity': Alter-globalization, Anti-privatization and the Human Right to Water in the Global South," *Antipode*, Vol. 39, Issue3 (June 2007), 430-455.

[836] Samuel Moyn, "A Powerless Companion: Human Rights in the Age of Neoliberalism," *Law and Contemporary Problems*, Vol. 77 (2015), 161. Similarly, for Young "the ideological framing lent by liberalism to rights law explains recurring resistance by courts to challenges that target serious economic and social injustices in Canadian society." See Margot Young, "The Right to Life,

more thorough attention to the manner how disadvantaged and marginalised communities are disproportionately harmed.[837] It is, therefore, essential to understand and account that the provision of environmental rights for all do not mean that justice is accomplished. Following Scott, it is important to learn to listen to what communities want before we default to "rights."[838]

2.2. Merging resilience and justice

2.2.1. Introducing resilience justice

At this point, it is important to understand the meaning of the term *resilience justice*, which has emerged as an important concept in urban adaptation uncertainties and disturbances and, in some cases, may go beyond the specificities of environmental rights.

Resilience justice was the subject of a partnership between the University of Louisville Centre for Land Use and Environmental Responsibility (CLUER), led by Craig Anthony (Tony) Arnold and Robert Garcia of the "The City Project".

Liberty, and Security of the Person," in Peter Oliver, Patrick Macklem, and Nathalie Des Rosiers (eds.), *The Oxford Handbook of the Canadian Constitution* (Oxford: Oxford University Press, 2017), 788.

[837] See Scott L. Cummings and Ingrid V. Eagly, "A Critical Reflection on Law and Organizing," *UCLA Law Review*, Vol. 48 (2001), 475 <https://escholarship.org/content/qt473524bg/qt473524bg.pdf> (accessed on 2020.01.05); and Sheila Foster, "Justice from the Ground Up: Distributive Inequities, Grassroots Resistance, and the Transformative Politics of the Environmental Justice Movement," *California Law Review*, Vol. 86 (1998), 775-841. A notable exception can be seen in Tracy-Lynn Humby, "Environmental Justice and Human Rights on the Mining Wastelands of the Witwatersrand Gold Fields," *Revue générale de droit*, Vol. 43 (2013), 67-112 <https://www.erudit.org/fr/revues/rgd/2013-v43-rgd01063/1021211ar.pdf> (accessed on 2020.01.05). Further, a focus on human rights tends to reinforce a false perception that humans can be considered separate and distinct from their environments. See Anna Grear, "The vulnerable living order: human rights and the environment in a critical and philosophical perspective," *Journal of Human Rights and the Environment*, Vol. 2, No. 1 (2011), 23-44.

[838] Scott, "Environmental justice and the hesitant embrace of human rights" (2019), 456.

This partnership intended to address disparities in green and blue infrastructure in low-income communities of colour in the city of Los Angeles and their effects on the communities' adaptive capacities.[839]

The process of implementing or enhancing social-ecological resilience in a certain territory is strictly connected to the need of balancing all the existing elements and fostering justice (or fairness) amongst its community.

Lyster's articulation of a "Capability Approach to Climate Justice," which defines climate justice in terms of creating and protecting the capabilities of all communities to respond to climate disasters and build their resilience to climate change is one example of this connection.[840] But Verchick's definition of "disaster justice" in terms of human capability represents another illustration of that, when calling for laws and policies that address the social, as well as natural causes of different vulnerabilities and disasters.[841] Nevertheless, according to Arnold, the concept of resilience justice

> "goes beyond the realms of climate change and disaster to address disparities of communities' capacities to adapt to disturbances and changing conditions generally."[842]

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[839] Arnold, "Adaptive Law," 185. The mentioned project was developed under the following reference: Resilience Justice for a Thriving Los Angeles: A Collaborative Framework for Infrastructure Planning and Investment: Grant from the Surdna Foundation to The City Project (Robert Garcia, PI); subgrant from The City Project (via Community Partners) to the University of Louisville Research Foundation (Tony Arnold, PI), 2016-2017. This partnership led to the creation of the "Resilience Justice Project" at the University of Louisville CLUER, which is led by Professor Arnold. More information about the project is available on the CLUER webpage <https://louisville.edu/landuse/resilience-justice-project> (accessed on 2020.01.05).

[840] Rosemary Lyster, *Climate Justice and Disaster Law* (Cambridge: Cambridge University Press: 2015), 132-139.

[841] Robert R. M. Verchick, "Disaster Justice: The Geography of Human Capability," *Duke Environmental Law & Policy Forum*, Vol. 23, Issue 23 (Fall 2012), 23-71.

[842] Arnold, "Adaptive Law" (2018), 185.

2.2.2. Finding a definition of resilience justice

According to Arnold, resilience justice can be defined

> "as the equitable capacity of all human communities to adapt to sudden shocks and changing conditions in ways that help the community to thrive. The framework for resilience justice addresses disparities in the vulnerabilities of placebased human communities (e.g., neighborhoods). It does so by building marginalized communities' adaptive capacity and remedying inequalities in the conditions that affect the communities' resilience."[843]

This suggested framework is not only based on studies and evidence regarding the conditions, adaptive capacity, and vulnerabilities of marginalised communities in certain territory, but it also makes use of methods of community-based participation in policy reform and decision-making.

From a social point of view, resilience is defined by the capacity of a human community to adapt to shocks and changes while retaining the community's core structure, functions and its community identity. Therefore, a resilience justice framework encompasses, according to Arnold's definition,[844] four types of resilience:

a) Resistance and strengthening to face disturbances and changes, trying to maintain the system's function;
b) Bounce-back, as a capacity to recover from shocks and disasters, intending to return to an original function;
c) Flexibility, as a capacity to adapt to changing conditions, which corresponds to an evolution of the system's function; and

[843] Arnold, Adaptive Law" (2018), 185.
[844] Arnold, Adaptive Law" (2018), 186.

d) Transformation, as a system's capacity to use disturbances and changes to restructure itself in desired ways, "transforming" its function.[845]

And all these four types are desired in any system. On the other hand, and from a social-ecological resilience perspective, the author defines justice as

> "the equitable access to and distribution of environmental, social, and institutional conditions on which communities depend to thrive and adapt and the opportunities to participate meaningfully and effectively in governance decisions concerning community conditions."[846]

This means that, by embracing a concept and a framework of resilience justice, legal systems can contribute to increasing the adaptive capacities and, at the same time, decreasing the existing vulnerabilities in the most marginalised and oppressed communities in a certain territory. Making use of a resilient justice framework, legal systems can also improve their own adaptive capacities, as systems, "to transform and evolve towards systemic justice."[847]

Regarding the functions of resilience justice, Boamah and Arnold[848] explain that, if properly framed as a political-ideological concept, serves the four following goals:

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[845] These four types of resilience are presented as an answer to the most common possible meanings of adaptation, which are the following: resistance; retreat; recovery; readjustment; and renewal. See Arnold, "Adaptive Law," 171-172; J.B. Ruhl, "A Summary of Present and Future Climate Adaptation Law," in Michael Gerrard, and Jody Freeman (eds.) *U.S. Global Warming Law* (American Bar Association, 2013), 677, 681; Fiona Miller et al, "Resilience and Vulnerability: Complementary or Conflicting Concepts?," *Ecology & Society*, Vol. 15, Issue 3 (2010), 11 <http://www.ecologyandsociety.org/vol15/iss3/art11/> (accessed on 2020.01.05).

[846] Arnold, "Adaptive Law" (2018), 186.

[847] Arnold, Adaptive Law" (2018), 185-186.

[848] Boamah and Arnold, "Assemblages of Inequalities and Resilience Ideologies in Urban Planning" (in press).

a) Enlighten power relationships and the social construction of inequality and risk in different systems;[849]

b) Engage social communities and institutional systems with deep structural "issues of justice, fairness, and legitimacy";[850]

c) Facilitate grassroots self-organising of oppressed social groups, such as slum dwellers certain parts of the world;[851] and

d) Give voice to the experiences of subordinated communities with vulnerability and adaptation.[852]

As a conclusion, and based on Arnold's research, resilience justice could be, therefore, understood as composed or characterised by the following elements or purposes:

a) The equitable capacity of all human communities to adapt to sudden shocks (disturbances) and changing conditions in ways that help the community to thrive;
b) Aims to address the systemic inequalities in society that create disparate vulnerabilities and capacities among communities and populations; and
c) Seeks to build the adaptive capacities, power, and resources of marginalized and oppressed communities to actively resist systemic injustices and determine for themselves their transformative futures.[853]

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[849] Mark Pelling and Chris High, "Understanding adaptation: what can social capital offer assessments of adaptive capacity?," *Global Environmental Change*, Vol. 15, Issue 4 (2005), 314.
[850] Cathy Wilkinson, "Urban resilience–what does it mean in planning practice?," *Planning Theory & Practice*, Vol. 13 (2012), 223.
[851] Skye Dobson, "Community-driven pathways for implementation of global urban resilience goals in Africa," *International Journal of Disaster Risk Reduction*, Vol. 26 (2017), 78-84.
[852] Bruce Evan Goldstein et al, "Narrating resilience: Transforming urban systems through collaborative storytelling," *Urban Studies*, Vol. 52 (2015), 1285-1303.
[853] Arnold, "Adaptive Law" (2018), 169-186.

In effect, and as demonstrated, resilience justice does not only consist of making systems resist in order to implement a fairer community. It is making a community-driven effort[854] to integrate all the four types of resilience (resistance, recovery, flexibility and transformation), through collective planning for disaster and risks,[855] powering clean and renewable energies for all,[856] including nature and ecosystems,[857] food production,[858] cooperative economies.[859] Moreover, it is to enhance socio-spatial networks of community-based organisations and collaborative and communicative processes and designs,[860] empowering citizens

[854] Wilson, *Resilience for All* (2018), 15-28.

[855] See generally Jaimie Hicks Masterson et al, *Planning for Community Resilience* (Washington, DC: Island Press, 2014); Jack Ahern, "Urban Landscape Sustainability and Resilience: The Promise and Challenges of Integrating Ecology with Urban Planning and Design," *Landscape Ecology*, Vol. 28, Issue 6 (2013), 1203-12; Wilson, *Community Resilience and Environmental Transitions* (2012); Goldstein, *Collaborative Resilience: Moving through Crisis to Opportunity* (2011); Daniel Aldrich, *Building Resilience: Social Capital in Post-Disaster Recovery* (Chicago: University of Chicago Press, 2012); David Godschalk et al, *Natural Hazard Mitigation: Recasting Disaster Policy and Planning* (Washington, DC: Island Press, 1999).

[856] Peter Newman et al, *Resilient Cities, Second Edition: Overcoming Fossil Fuel Dependence* (Washington, DC: Island Press, 2017).

[857] Timothy Beatley, *Handbook of Biophilic City Planning & Design* (Washington, DC: Island Press, 2017); Frederick Steiner et al (eds.), *Nature and Cities* (Cambridge, MA: The Lincoln Institute for Land Policy, 2016).

[858] Katharine Bradley, and Hank Herrera, "Decolonizing Food Justice: Naming, Resisting, and Researching Colonizing Forces in the Movement," *Antipode*, Vol. 48 (2016), 97-114; Gerde Wekerle, "Food Justice Movements: Policy, Planning, and Networks," *Journal of Planning Education and Research*, Vol. 23 (2004), 378-86; Robert Gottlieb and Anupama Joshi, *Food Justice* (Cambridge, MA: MIT Press, 2010).

[859] Duncan McLaren, and Julian Agyeman, *Sharing Cities: A Case for Truly Smart and Sustainable Cities* (Cambridge, MA: MIT Press, 2015); Timothy Beatley, *Native to Nowhere: Sustaining Home and Community in a Global Age* (Washington, DC: Island Press, 2005).

[860] Bruce Evan Goldstein, "Conclusion: Communicative Resilience," in Bruce Evan Goldstein (ed.), *Collaborative Resilience: Moving through Crisis to Opportunity* (Cambridge, MA: MIT, 2012), 359-372.

in each neighbourhood,[861] especially focusing on improving the quality of life for low-income, vulnerable and marginalised communities.[862]

2.2.3. Resilience justice among other perspectives of justice

The concept of resilience justice must be understood among other broad and different ideas of justice, especially with regard to the positions of several authors who contributed to the development of the concept of justice.

2.2.3.1. Aristotelian justice

At this point, it is fundamental to explain that the treatise of Aristotle on justice deals not only with the virtues of justice, but also with what might be considered the "formal" principles of justice. These could be abstract principles admitting of different, correct as well as incorrect, applications.

From the beginning, the Greek author distinguishes between universal and particular justice.[863] According to him, the ideas of just and unjust are spoken of homonymously. Nevertheless, it escapes notice because the different cases are in close proximity. The ambiguity is therefore detected by considering two forms of a possible injustice, which would be lawlessness and inequality. The referred

[861] Leigh Graham et al, "The Influence of Urban Development Dynamics on Community Resilience Practice in New York City after Superstorm Sandy: Experiences from the Lower East Side and the Rockaways," *Global Environmental Change – Human Policy Dimensions,* Vol. 40 (September 2016), 112-124.

[862] David Dodman, and Diana Mitlin, "Challenges for Community-Based Adaptation: Discovering the Potential for Transformation," *Journal of International Development*, Vol. 25, Issue 5 (July 2013), 640-659; Jeremy G. Carter et al, "Climate Change and the City: Building Capacity for Urban Adaptation," *Progress in Planning*, Vol. 95 (January 2015), 1-66; Diane Archer and David Dodman, "Making Capacity Building Critical: Power and Justice in Building Urban Climate Resilience in Indonesia and Thailand," *Urban Climate*, Vol. 14 (December 2015), 68-78.

[863] See Aristotle, *The Nicomachean Ethics* (2009). More specifically, see *EN* V 1 1129 a 26 – b 11.

concepts are then opposed to two other distinct forms of justice, which are lawfulness and equality. Aristotle calls them *universal justice* and *particular justice*, respectively. In this particular context, "equal" (*isos*) and "unequal" (*anisos*) have the connotation of "fair" and "unfair". The one who is unfair demonstrates to be excessively possessive or greedy (*pleonektēs*), because he/she seeks for more than what is his/her fair share of the goods of fortune (e.g. property or honour).[864]

This means that universal justice is not a particular virtue but includes all of virtue. It includes any ethical virtue in so far as it promotes and protects the good of the community, whereas particular justice involves specific sorts of actions affecting the common advantage. On the other hand, particular justice itself takes different specific forms, each of which promotes the common advantage in a distinctive way.

To this author, the idea of *distributive justice*[865] involves the assignment to individuals of a fair or equal share (*to ison*) of a common asset such as property or honour. According to the theory of the mean, a just share is a mean between a share that is too large or too small.[866]

On the other hand, *corrective justice*[867] aims at the rectification of past losses due to the injustice of others. It treats the parties involved as if they were numerically equal, because it is not concerned with the distribution of a common asset (as it

[864] Miller, *Nature, Justice, and Rights in Aristotle's Politics* (1995), 68.

[865] The adjective *dianemētikos*, "distributive," is associated with the nouns *nomē* and *dianomē*, "distribution," and the verbs *nemein*, *dianemein*, and *aponemein*, "to distribute".

[866] Miller, *Nature, Justice, and Rights in Aristotle's Politics* (1995), 70. See also Aristotle, in *EN* 1131 a 15 – 20, where the author explains that "(…) the just must be a mean and equal and relative to something (that is, for some persons); and insofar as it is a mean it is between things (that is, greater and less), insofar as it is equal, it is of two things, and insofar as it is just, it is for some people. Therefore, the just must involve four things at least; the persons for whom it is just are two, and the things which it involves are two."

[867] The adjective *diorthōtikon* is associated with the adjective *orthos*, "correct," and the verbs *diorthoun* and *epanorthoun*, "to correct".

happens with distributive justice). Moreover, it is concerned with repairing losses incurred in individual transactions.[868] The aim of the judge must be, in this case, to assure the restoration of an unjust situation to a just one, through restoring a sort of numerical equality between the several parties.[869] Nevertheless, the concept of corrective justice may resemble distributive justice in that a just claim consists in the mean between the realities of more and less.[870]

Aristotle also refers to a "proportional reciprocity" (*to antipeponthos kat' analogian*), which would be a *reciprocal justice*, is concerned with communities of exchange.[871] Aristotle's main point is clear in this area. Individuals can only form a community of exchange if that exchange is just. And an exchange is just only if the things or goods exchanged are in some way equal to the members of the community.[872] This means that reciprocal justice requires that the things exchanged be in some way "equalised" (*isasthēnai*).[873]

2.2.3.2. Some perspectives on justice after Aristotle

Then other philosophers have continued to theorise on the concept of justice.[874] Cicero, for example, considered that justice reduced in itself "the most illustrious

[868] These are often private transactions, but in some cases the injured party is a public official (see *EN* V 5 1132 b 23 – 30) or the polis itself (see *EN* 11 1138 a 12 – 14).

[869] See *EN* V 4 1131 b 27 – 1132 a 7.

[870] See *EN* V 1132 a 14 – 19, and Miller, *Nature, Justice, and Rights in Aristotle's Politics* (1995), 71-72.

[871] See *EN* V 5 1132 b 31 – 3.

[872] See 1133 a 12, 24.

[873] Miller, *Nature, Justice, and Rights* (1995), 73.

[874] Even before Aristotle, it is possible to find other authors, such as Sophocles, Socrates or Plato. See Sophocles, *Antigone*, trans. Don Taylor (London: Bloomsbury, 2012); Plato, *Apology of Socrates*, ed. A. M. Adam (Cambridge: Cambridge University Press, 2000), 38-e, 39-b; Plato, *The Republic*, ed. G. R. F. Ferrari and trans. Tom Griffith (Cambridge: Cambridge University Press, 2000), 433a-442d.

of the virtues". The first duty of that virtue consisted of no man harming another unless he has been provoked by injustice. Then it was also to guarantee the use of common goods for the wellness of the community and the individuals, to the interest of each other.[875]

From the perspective of Augustine of Hippo:

> "If a commonwealth is the weal of the people, and if there is no people save one bound together by mutual recognition of rights, and if there are no rights where there is no justice, it follows beyond question that where there is no justice, there is no commonwealth."

And the mentioned philosopher concluded that justice "is the virtue which accords to each and every man what is his due." And this would mean that what is done in an unjust way is not done in accordance with the law.[876]

Under the Institutes of Justinian (*Institutiones Justiniani*), justice was "the constant and perpetual wish to render every one his due."[877] Moreover, in the same way, the Digest (*Digesta seu Pandectae*) provided that:

> "Justice is a steady and enduring will to render unto everyone his right. 1. The basic principles of right are: to live honourably, not to harm any other person, to render to each his own. 2. Practical wisdom in matters of right is an awareness of God's and men's affairs, knowledge of justice and injustice" (Ulpian, Rules, book 1).[878]

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[875] Cicero, *On Duties*, ed. M. T. Griffin and trans. E. M. Atkins (Cambridge: Cambridge University Press, 1991), Book 1, 20.

[876] Saint Augustine, *The City of God*, Books XVII-XXII, trans. Gerald G. Walsh, S.J. and Daniel J. Honan (Washington D.C.: The Catholic University of America Press, 1954) Book XIX, Chapter 21.

[877] Thomas Collet Sandars (ed.), *The Institutes of Justinian* (London: Longman, 1865), I. 1, 1, 1 <https://www.fd.unl.pt/Anexos/Investigacao/7877.pdf> (accessed on 2020.02.01).

[878] Alan Watson (ed.), *The Digest of Justinian*, Vol. 1 (Philadelphia: University of Pennsylvania Press, 1985), 1, 1, 10.

Following these principles, Aquinas suggested that "the proper form of a definition" of justice would be:

> "'(…) a habit whereby a man renders to each one his due by a constant and perpetual will': and this is about the same definition as that given by the Philosopher [Aristotle] (Ethic. v, 5) who says that 'justice is a habit whereby a man is said to be capable of doing just actions in accordance with his choice.'"[879]

Moreover, the same author explains that:

> "Legal justice does indeed direct man sufficiently in his relations towards others. As regards the common good it does so immediately, but as to the good of the individual, it does so mediately. Wherefore there is need for particular justice to direct a man immediately to the good of another individual."[880]

After these thoughts, other perspectives could be mentioned, such as the one of Blackstone, who considered that a "mutual connection" between justice and human felicity existed. Therefore, "(…) man should pursue his own happiness" and this was the foundation of what the author called "ethics, or natural law."[881]

In addition to this position, Austin asserts that:

> "Though it signifies conformity or nonconformity to any determinate law, the term justice or injustice sometimes denotes emphatically, conformity or nonconformity to the ultimate measure or test: namely, the law of God. This is the meaning annexed to justice, when law and justice are opposed: when

[879] Thomas Aquinas, *Summa Theologica*, Part II-II (*Secunda Secundae*), trans. Fathers of the English Dominican Province (London: Burns Oates, 1922), Q. 58, Art. 1.

[880] Aquinas, *Summa Theologica* (1922), II-II, Q. 58, Art. 7. This is asserted as a reply to the objection (1) that "It would seem that there is not a particular besides a general justice. For there is nothing superfluous in the virtues, as neither is there in nature. Now general justice directs man sufficiently in all his relations with other men. Therefore there is no need for a particular justice."

[881] William Blackstone, *Commentaries on the Laws of England, Book I: Of the Rights of Persons*, ed. Wilfrid Prest (Oxford: Oxford University Press, 2016), Introduction Section 2, par. 41, 34.

> a positive human rule is styled unjust. And when it is used with this meaning, justice is nearly equivalent to general utility. The only difference between them consists in this: that, as agreeing immediately with the law of God, a given and compared action is just; whilst, as agreeing immediately with the principle which is the index to the law of God, that given and compared action is generally useful. And hence it arises, that when we style an action just or unjust, we not uncommonly mean that it is generally useful or pernicious."[882]

From a more continental perspective, Jehring asks the following:

> "If the feeling of legal right of the individuals of the nation is blunted, cowardly, apathetic; if it finds no room for a free and vigorous development, because of the hindrances which unjust laws and bad institutions put in its way; if it meets with persecution where it should have met with support and encouragement; if, in consequence of this, it accustoms itself to endure injustice and to look upon it as something which cannot be helped, who will believe that such a slavish, apathetic and paralyzed feeling of legal right can be aroused all at once to life and to energetic reaction, when there is question of a violation of the rights, not of an individual, but of the whole people; an attempt on their political freedom, the breach or overthrow of their constitution, or an attack from a foreign enemy?"

For the author, the answer to this question is that the "battler for constitutional law (…) is none other than the battler for private law," explaining that private and not public law would be school for political education and for the defence of political rights.[883]

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[882] John Austin, *The Province of Jurisprudence Determined*, ed. Wilfrid E. Rumble (Cambridge: Cambridge University Press, 1995), Lecture VI, Note 20, 218-219.

[883] Rudolph von Jhering, *The Struggle for Law*, trans. John J. Lalor (Chicago: Callaghan, 1915), 98-101.

On the other hand, based on his perspective on the importance of social authority, for Kelsen justice is "social happiness," as it would be a kind of happiness that human beings are not able to find as isolated individuals and hence try to seek it within the society where they live in.[884]

2.2.3.3. Rawls' perspective on justice

In 1971, Rawls decided to set out two fundamental principles of justice for the so-called "decent" or liberal societies.[885] On the one hand, the liberty principle (first principle) intends to protect basic liberties for all members of a certain society. On the other hand, the difference principle (second principle of justice) opens a margin for social and economic inequalities within the same society, when they are thought to be of benefit to the least advantaged and attached to positions open to all under conditions of fair equality of opportunity.[886]

From an international perspective, the distinct principles of justice are mostly understood to apply to the protection of the peoples in each society, such as freedom, independence, equality, human rights, right to self-defence, duties of non-intervention, respect for treaties, and assistance to other people living in unfavourable conditions.[887]

The specific reality of human rights is then understood by Rawls as a necessary condition of any system of co-operation between what he calls "decent societies" (those that are "prepared to stand in a relation of fair equality with all other

[884] Hans Kelsen, *General Theory of Law and State*, trans. Anders Wedberg (Cambridge, MA: Harvard University Press, 1945), 6.

[885] See Rawls, *A Theory of Justice* (1999).

[886] Rawls, *A Theory of Justice* (1999), 47-100.

[887] Rawls, *A Theory of Justice* (1999), 37; and Gillian Brock, *Global Justice: A Cosmopolitan Account* (Oxford: Oxford University Press, 2009).

societies")[888] to prevent the emergence of a society based solely on "command by force." The author argues for the protection of a right to democratic representation and dissent, in order to allow "an opportunity for different voices to be heard." In this case, legal officials are expected to (and must) "give a conscientious reply" to dissenting voices, appealing to the common idea of justice.[889] Conflicting concerns are very often brought to bear on understandings of justice. In these situations, such incidents of conflict can also be resolved if deliberations on justice are led by a consensus on what is fair and reasonable within societies.[890]

Some societies are considered as "burdened" in terms of "unfavourable conditions", which make it "difficult if not impossible" for those societies to establish or stabilise the basic instruments or arrangements required for them to qualify as "well-ordered."[891] There should, therefore, be given assistance by other ("decent") societies, as a natural duty of "transitional justice", in order to preserve just institutions and establish comparable institutions in other societies where they do not yet exist, or where they have collapsed and are in need of restoration with outside assistance.[892]

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[888] Rawls, *A Theory of Justice* (1999), 121-122. For a certain people to be understood as "decent," at least, three characteristics should coexist: such as (i) the expectation that the society in question will conduct its affairs in ways that is peaceful and respectful of other societies; (ii) the society in question will establish a system of law that secures basic human rights for all members, including the right to life by which Rawls means rights to the means of subsistence and security; and (iii) the society in question nurtures a right to liberty (democratic freedom), as well as a right to formal equality. A primary emphasis should, therefore, be placed on the way major social institutions distribute such rights and duties, as well as determine the division of advantages among the people through economic, social, and political instruments. See Rawls, *A Theory of Justice* (1999), 6.

[889] Rawls, *A Theory of Justice* (1999), 66-68.

[890] Skillington, *Climate Justice and Human Rights* (2017), 44.

[891] Rawls, *A Theory of Justice* (1999), 5.

[892] See Rawls, *A Theory of Justice* (1999), 118.

With regard to several numbers of cases of unequal distribution of pollution effects or the depletion of common resources, current practices of resource exploitation do not benefit all peoples. Actually, they rather undermine the quality of life of a global majority. According to the reasoning of Rawls, these inequalities perpetuated by environmentally destructive practices are unjust and should not subsist.[893] The already mentioned UNFCCC, of 1992, is a strong example of how this needed cooperation between the peoples.

For Beitz, this duty of assistance to climate vulnerable peoples should be seen as a global principle of egalitarian distribution among all the human beings and not only simply a model of transitional justice whose demands are exhaustively satisfied only when all persons are granted a sufficient portion of resources to meet a minimal threshold of subsistence needs.[894] According to this author, one of the main problems with Rawls' thesis is that constraints on substantive global inequalities are not imposed.[895] That is the reason why Beitz and and also Pogge consider that the interpretation of Rawls about the duty of assistance is limited.[896] The mentioned authors understand that it is merely confined as it is to a minimalist status of moral concern for the resource needs of those who live in certain societies of destitution or those most vulnerable to the effects of climate change.[897]

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[893] Skillington, *Climate Justice and Human Rights* (2017), 45-46.

[894] Charles Beitz, "International Liberalism and Distributive Justice: A Survey of Recent Thought," *World Politics*, Vol. 51, Issue 2 (1999), 287.

[895] Beitz, "International Liberalism and Distributive Justice" (1999), 287.

[896] See Thomas Pogge, "Priorities of Global Justice," *Metaphilosophy*, Vol. 32, Nos. 1/2 (2001), 6-24; and Thomas Pogge, "A cosmopolitan perspective on the global economic order," in Gillian Brock and Harry Brighouse (eds.) *The Political Philosophy of Cosmopolitanism* (Cambridge: Cambridge University Press, 2005), 92-109.

[897] Skillington, *Climate Justice and Human Rights* (2017), 46-47.

2.2.3.4. Contemporary perspectives

In addition to the perspectives introduced above, and specifically related to the connection between justice and the environment, other contemporary authors have contributed to the debate in this area. The following paragraphs intend to present some possible interpretations with regard to justice and social-ecological systems.

2.2.3.4.1. Distribution

In most of the last half-century, a large part of the literature has understood justice as a question of equity in the distribution of social goods. Brighouse, for example, claims that the "fundamental question is this: how, and to what end, should a just society distribute the various benefits (resources, opportunities, and freedoms) it produces, and the burdens (costs, risks, and unfreedoms) required to maintain it?"[898] From a similar perspective, Barry argues that justice only applies where some distributive consideration comes into play, being other issues merely questions of right and wrong.[899] Actually, Barry has followed Rawls on the mentioned idea of justice. In this issue, the author generally reiterates that we should agree on the rules of distributive justice while remaining impartial to different notions of the good life individuals have.[900]

[898] Harry Brighouse, *Justice* (Cambridge: Polity Press, 2004), 2.

[899] Brian Barry, "Sustainability and Intergenerational Justice," in Andrew Dobson (ed.), *Fairness and Futurity: Essays on Environmental Sustainability and Social Justice* (Oxford: Oxford University Press, 1999), 93-117.

[900] Brian Barry, *Justice as Impartiality* (Oxford: Oxford University Press, 1995); and Brian Barry, *A Theory of Ecological Justice* (London: Routledge, 2005).

2.2.3.4.2. Recognition

Another perspective of justice that has been embraced by other recent theorists is the one of recognition. From Young[901] to Fraser[902], the mere emphasis on distribution without an examination of the underlying causes of maldistribution has been challenged by a certain number of authors. From their perspective, a major inadequacy of theories of liberal justice is the singular focus on the debate around ideal and fair processes for the distribution of goods and benefits. These critics intend to examine real injustices as the focus, arguing that there is much more to injustice than maldistribution, especially when one begins to look at exactly who is left out of actual distributions. An idea of recognition is, therefore, the main concern. And on this issue also other authors, such as Honneth and Taylor, contend that a lack of recognition in the social and political realms harms oppressed individuals and communities in the political and cultural realms. This would be the foundation for distributive injustice.[903]

More specifically in the social realm, the notion of "accountability" introduced by Dean demonstrates to be useful.[904] Her framework is focused on the process of the construction of the "status" of the misrecognised. The theorist argues that it is essential to uncover where accountability and responsibility lie for both the

[901] Iris Young, *Justice and the Politics of Difference* (Princeton, NJ: Princeton University Press, 1990).
[902] Nancy Fraser, *Justice Interruptus: Critical Reflections on the 'Postsocialist' Condition* (New York: Routledge, 1997); Nancy Fraser, "Social Justice in the Age of Identity Politics: Redistribution, Recognition, and Participation," in Grethe B. Peterson (ed.), *The Tanner Lectures on Human Values*, Vol. 19 (Salt Lake City, UT: University of Utah Press, 1998); Nancy Fraser, "Rethinking Recognition," *New Left Review*, 3 (2000), 107-20; and Nancy Fraser, "Recognition without Ethics?," *Theory, Culture, and Society*, Vol. 18 (2001), 21-42.
[903] Axel Honneth, *The Struggle for Recognition: The Moral Grammar of Social Conflicts* (Cambridge, MA: MIT Press, 1995); Axel Honneth, "Recognition or Redistribution? Changing Perspectives on the Moral Order of Society," *Theory, Culture, and Society*, Vol. 18, Nos. 2/3 (2001): 43-55; and Charles Taylor, *Multiculturalism*, Amy Gutman (ed.) (Princeton, NJ: Princeton University Press, 1994).
[904] Jodi Dean, *Solidarity of Strangers: Feminism after Identity Politics* (Berkeley, CA: University of California, 1996).

construction of problematic notions and the reconstruction of those based in more authentic recognition.

2.2.3.4.3. Critique to recognition

From another perspective, Miller assumes to be sympathetic to the arguments for recognition and the respect that comes with it, noting that it is an integral part of procedural justice. Nevertheless, while following Rawls, he claims that respect and dignity are preconditions for distributive justice. He believes that recognition is included in the definition of distributive justice and, therefore, the key claim of recognition as a distinct category of justice must be dismissed. For Miller, as for many other liberal theories of justice, recognition is then assumed, and subsumed, within the distributive sphere of justice.[905]

The theorist acknowledges the question of recognition as a good, but he also concludes that the range of definitions of recognition is too wide, and so "we may be reluctant to think of recognition as something whose allocation can be regulated by interpersonal principles of justice."[906]

Nevertheless, another dimension to the concept and practice of justice in addition to distribution and recognition demonstrates to be relevant to this dissertation, which is procedural justice. Here justice is defined as fair and equitable institutional processes of a state. Miller, for example, use the assumptions of a procedural approach as another argument against recognition. He argues that respect and recognition are necessary preconditions to any theory of procedural

[905] David Miller, "A Response," in Daniel A. Bell and Avner de-Shalit (eds.), *Forms of Justice: Critical Perspectives on David Miller's Political Philosophy* (Lanham, MD: Rowman and Littlefield, 2003).

[906] David Miller, *Principles of Social Justice* (Cambridge, MA: Harvard University Press, 1999), 10.

justice. If procedural justice is attained, recognition is included and so is to be assumed.

The concern of the theorists of recognition is the empirical reality of procedural injustice. Fraser, Honneth, and Young insist on a thoroughly integrated understanding of justice. They note that the relationship between justice as equity and justice as recognition is played out in the procedural realm, as both hinder the ability of individuals and communities to participate.

Democratic and participatory decision-making procedures are then to be understood as both an element of, and a condition for, social justice. They simultaneously challenge the realities of institutionalised exclusion, a social culture of misrecognition, and current unfair distributional patterns. This is the reason why, in dealing with issues of justice beyond the distributive, Young insists on participatory democratic structures to address existing injustices based in both distribution and recognition – addressing justice in the "rules and procedures according to which decisions are made."[907]

Based on these principles, the idea of justice shifts to procedural issues of participation in deliberation and decision making, because for a norm to be just, the community who follows it must have an effective voice in its consideration and be able to agree to it without coercion. This means that, for a social condition to be just, it must enable all to meet their needs and exercise their freedom. Thus, justice requires that all are given the opportunity to express their needs.[908]

[907] Young, *Justice and the Politics of Difference* (1990), 23.

[908] Young, *Justice and the Politics of Difference* (1990), 34.

2.2.3.4.4. Capabilities

Apart from these theories and their critiques, there is another school of thought that has been attempting to expand a conception of justice beyond its sole focus on distribution. This school follows the arguments of Sen and Nussbaum, who have developed an approach that, while grounded in an understanding of the centrality of distribution as an element of justice, also goes beyond the limitations of standard distributional theory.[909]

They developed a "capability" approach, whose main argument is that just arrangements should be judged not only in simple distributive terms, but also more particularly in how those distributions affect our well-being and how we "function." Capabilities would be, therefore, about someone's opportunities to do and to be what they choose in the context of a given society. This thought's focus would be on individual agency, functioning, and well-being, rather than more traditional distributive indicators.[910]

Sen intends to move away from a sole concern with the amount of goods we get, and to examine what those goods do for us.[911] He compares classic Sanskrit and Greek texts, including Aristotle's principle that "wealth is evidently not the good we are seeking; for it is merely useful and for the sake of something else."[912] The author uses the concept of capabilities to compare quality of life in different places, especially in developing nations. He sees it as a much better indicator of

[909] Amartya Sen, "Well-Being, Agency and Freedom: The Dewey Lectures 1984," *The Journal of Philosophy*, Vol. 82, No. 4 (1985), 169-221; Amartya Sen, *Commodities and Capabilities* (Oxford: Oxford University Press, 1999); Amartya Sen, *Development as Freedom* (New York: Anchor, 1999); Martha C. Nussbaum and Amartya Sen, *The Quality of Life* (Oxford: Oxford University Press, 1992); Martha C. Nussbaum, *Women and Human Development: The Capabilities Approach* (Oxford: Oxford University Press, 2000); and Martha C. Nussbaum, "The Moral Status of Animals," *The Chronicle of Higher Education*, Vol. 52, No. 22 (2006), B6-B8.

[910] On this issue, see Steven Pressman and Gale Summerfield, "Sen and Capabilities," *Review of Political Economy*, Vol. 14, No. 4 (2002), 429-34.

[911] See Sen, *Development as Freedom* (1999).

[912] Aristotle, *The Nicomachean Ethics* (2009), 7.

such quality than a simple growth or a wealth-centred gross national product (GNP) rating.

According to him, the central feature of well-being is the ability to achieve valuable functionings. The need for identification and valuation of the important functionings cannot be avoided by looking at something else, such as happiness, desire fulfilment, opulence, or command over primary good.[913] A capability reflects, therefore, "the alternative combinations of functionings from which the person can choose one combination."[914]

From Nussbaum's perspective, the capabilities approach is then based in wanting to "see each thing flourish as the sort of thing it is."[915] This means that the essential measure of justice is not how much we have, but whether we have what is necessary to enable a more fully functioning life, as we choose to live it.

For both Sen and Nussbaum citizen participation is integral to an understanding of justice. Sen's vision of participation includes human beings as agents, and not simply recipients of goods. Participation is thus a freedom and function in itself and something that supports a range of other functions in this conception of justice. Nussbaum sees participation (or the control over one's political environment) as a key capability that supports the overall functioning of the individual, being a function in its own right as well.

This capability approach to justice illustrates not a singular, distribution-based, understanding of justice, but a more linked approach. Here, concepts and practices such as recognition and participation are completely tied to

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[913] Sen, "Well-Being, Agency and Freedom: The Dewey Lectures 1984" (1985), 200.

[914] Amartya Sen, "Human Rights and Capabilities," *Journal of Human Development*, Vol. 6, No. 2 (2005), 154.

[915] Martha C. Nussbaum, "Beyond 'Compassion and Humanity': Justice for Nonhuman Animals," in Cass R. Sunstein and Martha C. Nussbaum (eds.), *Animal Rights: Current Debates and New Directions* (Oxford: Oxford University Press, 2004), 306.

distributional concerns. The focus of the capabilities argument is holistically on the importance of individuals functioning within a base of a minimal distribution of goods, social and political recognition, political participation, and other possible capabilities.

The inclusion of participatory rights and freedoms as additional capabilities necessary to transform goods into a good life illustrates the necessity of linking these various conceptions in a larger framework. Sen and Nussbaum expand the distributional realm as it focuses not just on the distribution of goods needed to flourish, but the processes that a community depends on for that flourishing to happen. They understand all of these mentioned components as necessary for a broader set of factors in order to our lives to function. Justice then is about distribution, recognition, participation, and more, for a community to be able to fully live the lives it designs and expects to.[916]

2.2.3.4.5. Justice and Groups

All these justice theories, which are based on Rawlsian approaches are very often oriented to doing justice to individuals. Even recognition authors such as Fraser and capabilities theorists such as Sen and Nussbaum are considered to remain within individualist frameworks, focusing more on the impact of such areas regarding individuals and the justice they receive.

The most well-known theorist for taking on group rights explicitly as an element of justice is perhaps Kymlicka, who, even though, appears to stay within a liberal individualist framework.[917] And a major problem is that many injustices are done

[916] On this analysis, see Schlosberg, *Defining Environmental Justice: Theories, Movements, and Nature* (2007), 29-34.

[917] See Will Kymlicka, *Liberalism, Community, and Culture* (Oxford: Oxford University Press, 1989); Will Kymlicka, *Multicultural Citizenship* (Oxford: Oxford University Press, 1995); and Will Kymlicka, *Politics in the Vernacular* (Oxford: Oxford University Press, 2001).

to groups. From slavery to subjugation of indigenous populations, or even racial, cultural, religious, sexual preference, and gender-based forms of discrimination and persecution, many are the possible group issues that can be addressed.

As examples, Fraser and Young focus on gender discrimination, and Kymlicka works on group rights centres on social groups in Canada such as First Nations and the Quebecois.

Kymlicka directly takes on the issue of group rights. For him, the membership of a cultural group or community should be seen as a primary good in a system of justice. He remains tied primarily to an individualist conception of justice, but one that depends much on what we get from groups. His critics argue that he still focuses on individual flourishing, even if that flourishing happens in the context of groups and, for him, group rights are protected for the sake of individualist liberal notions of justice.[918]

On the other hand, notes that even the perceived group injustices are actually individual injustices, because they prohibit someone to express opinions and participate in political decisions in their own tongue. Therefore, they actually violate individual freedom of expression and due process and can be addressed as such.[919]

Nevertheless, for Kymlicka, in cases where minority groups are in danger of being consistently outvoted (or outbid in markets), special attention should be paid specifically to group rights. The author considers it as a "liberal culturalism."[920] In addition to standard liberal rights, Kymlicka argues that it:

[918] Schlosberg, *Defining Environmental Justice: Theories, Movements, and Nature* (2007), 35.
[919] Brighouse, *Justice* (2004), 109.
[920] Kymlicka, *Politics in the Vernacular* (2001), 39.

> "must also adopt various group-specific rights or policies which are intended to recognise and accommodate the distinctive identities and needs of ethnocultural groups."[921]

The focus on group rights as an element of justice has been used by multicultural pluralists looking for a liberal justification for group difference and self-rule. Theorists such as Galston (2002) and Tully (1995) emphasise the relationship between demands for recognition and demands for forms of group autonomy.[922] Tully specifically claims that multicultural demands for recognition share a traditional political motif, which is "the injustice of an alien form of rule and the aspiration to self rule in accord with one's own customs and ways."[923] Also Raz argues that multiculturalism "emphasizes the role of cultures as a precondition for, and a factor which give shape and content to, individual freedom."[924] These struggles are for liberty, autonomy, and self-rule, which are enduring characteristics of liberal justice, at the level of the group.

The capabilities listed by Sen and by Nussbaum are almost exclusively proposed and examined solely at the individual level. However, many of those capabilities are assisted by association with groups and sometimes can be only satisfied within groups. And, in this ground, Stewart recognises that group capabilities and individual capabilities should be analysed and categorised.[925] For her, groups are important to capabilities in three ways: because (i) they "affect people's sense of well-being"; (ii) they are "important instrumentally in determining efficacy and resource shares"; and because (iii) "groups influence values and choices, and

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[921] Kymlicka, *Politics in the Vernacular* (2001), 42.

[922] See William A. Galston, *Liberal Pluralism: The Implications of Value Pluralism for Political Theory and Practice* (Cambridge: Cambridge University Press, 2002); and James Tully, *Strange Multiplicity: Constitutionalism in an Age of Diversity* (Cambridge: Cambridge University Press, 1995).

[923] Tully, *Strange Multiplicity… (*1995), 6.

[924] Joseph Raz, *Ethics in the Public Domain* (Oxford. Clarendon Press, 1994), 163.

[925] Frances Stewart, "Groups and Capabilities," *Journal of Human Development*, Vol. 6, No. 2 (2005), 185-204.

hence the extent to which individuals choose to pursue valuable capabilities for themselves and for others."[926]

As Stewart concludes, groups are essentially collective entities, involving collective action and interaction among individuals, and because of the interactive element, their capabilities are not simply the sum of the individual capabilities of members of the group. If groups are seen as both the environment within which individual justice is experienced and as a realm of justice in its own right, there must be thus specific implications for policy (and even law).[927]

Then, law and policy urge to address group inequalities, in order to enact tolerance for difference to coexist and thrive. This will certainly support group recognition and empowerment, and numerous collective activities that promote both group and individual capabilities as well.[928]

2.2.4. Distinguishing different approaches

In order to respond to researchers who would be more sceptical to a new framework for resilience, Boamah and Arnold suggest that, in the context of planning and urban development, it is possible to identify

> "three sometimes-coalescing and sometimes-conflicting forms of resilience ideological assemblages that have emerged from various parts and fragments of ideological thought and socio-spatial activity: 1) eco-resilience; 2) structural resilience; and 3) resilience justice."[929]

[926] Stewart, "Groups and Capabilities" (2005), 190.

[927] Stewart, "Groups and Capabilities" (2005), 200-201.

[928] Schlosberg, *Defining Environmental Justice: Theories, Movements, and Nature* (2007), 36-37.

[929] Boamah and Arnold, "Assemblages of Inequalities…" (in press).

2.2.4.1. The eco-resilience approach

According to the authors, the eco-resilience form assemblage

> "aims to build and strengthen the resilience of interdependent social-ecological-institutional systems through governance actions for the management of ecosystems and their functions (…)."[930]

One of the most important focus of this approach is on the effects that communities and institutions induce in ecosystems and also the feedbacks from those ecosystems to social and institutional ones. The intention of eco-resilience is to reform the processes of planning and management in order to make enhance their capacity to adapt and incorporate the learning and feedback structures that usually do not integrate those processes.

In some of its elements, this approach could often be resembled to "green ideologies."[931] Both approaches accept that the exploitation of human beings and the degradation of the natural environment and its resources are caused by the social and institutional systems and that new interdependent perspectives and methods are needed in order to prevent catastrophes for the various systems in a given territory. Nevertheless, eco-resilience is not so characterized by the "intrinsic value of nature or human-nature relationships." [932] It is, though, more focused on the effects of changed ecosystems' services in other systems (ecologic, economic or social).

However, since this approach embraces a concept such as that of ecosystem services, some controversial critique has been presented, connecting it to a more neoliberal perspective and grasping nature from an economic and financial point

[930] Boamah and Arnold, "Assemblages of Inequalities…" (in press).

[931] Jeroen F. Warner et al, "The politics of adaptive climate management: Scientific recipes and lived reality," *Wiley Interdisciplinary Reviews: Climate Change*, Vol. 9, Issue 3 (May/June 2018), e515.

[932] Boamah and Arnold, "Assemblages of Inequalities…" (in press).

of view. This understanding would perpetuate social injustice and give short space for bottom-up governance solutions, which could permit people's participation in decision-making.[933]

2.2.4.2. The structural resilience approach

The concept of structural resilience is understood as a form that "aims to make systems structurally stronger, more recoverable, and more flexible so that they can withstand disturbances and changes."[934] Some examples of systems that can be structurally strengthened are watersheds or wetlands (in case of ecosystems), but also economic systems, social communities or political networks (for social-economic systems). Other examples that can be presented are coastal areas or cities (as built environments), but also legal and policy frameworks or self-governing commons (from an institutional perspective). [935]

More generally, it is to this structural resilience approach that governments, organisations or populations refer when they implement or request new measures or policies. It is usually connected to the protection of ecosystems, environments, and conditions from the threats and risks that come from uncertain and unstable cross-system dynamics.

In fact, it consists of a more conservative ideology in the sense that it accepts the systems and institutions which already exist and looks at them as they should be maintained. Therefore, it does not foster social or political triggering in order to

[933] See Thomas Sikor et al, "Toward an Empirical Analysis of Justice in Ecosystem Governance," *Conservation Letters*, Vol. 7, Issue 6 (November/December 2014), 524-532; Thomas Sikor, *The Justices and Injustices of Ecosystem Services*, (London: Routledge, 2013).

[934] Boamah and Arnold, "Assemblages of Inequalities…" (in press). See also Fatima Shah, and Federica Ranghieri, *A Workbook on Planning for Urban Resilience in the Face of Disasters* (Washington, DC: The World Bank, 2012), 6.

[935] Boamah and Arnold, "Assemblages of Inequalities…" (in press).

induce change or questioning justice and the need of improved situations. On the opposite sense, it can protect the already existing frameworks, such as maintaining markets or economic productivity, financial institutions, land development methods, and other current traditional systems, protecting them from a possible breakdown. Consequently, structural resilience approach can be a weapon of the *status quo* forces to perpetuate present realities, preventing them from major changes.[936]

2.2.4.3. The resilience justice approach

Finally, the resilience justice form of assemblage is considered as an approach which "aims to address the systemic inequalities in society that create disparate vulnerabilities and capacities among communities and populations."[937]

It seeks to integrate considerations for social justice, critiques of structural inequalities, and commitments in order to enhance the resilience of the most marginalised sectors of society. Moreover, the resilience justice approach intends to generate adaptive capacities, power, and resources within those marginalized communities to actively resist general and systemic injustices and overcome them, empowering them to shape their transformative futures, from a bottom-up perspective. This development of frameworks of understanding and building community resilience can, in effect, represent the cornerstone of a major transition to fairer social-ecological systems.[938]

Regarding the roots of resilience justice as a form of resilience ideology, Boamah and Arnold explain that

[936] Boamah and Arnold, "Assemblages of Inequalities…" (in press).

[937] See also Arnold, "Adaptive Law" (2018), 186.

[938] Wilson, *Community Resilience and Environmental Transitions* (2012), 14-51; Wilson, *Resilience for All* (2018), 169-175.

> "First, resilience justice draws on concepts of environmental justice, disaster justice, and climate justice, all of which focus on disparate distribution of harms and risks (i.e., pollution, disasters, and the effects of climate change) (…). However, resilience justice is framed around disparities in community capacities and their potential to thrive despite all kinds of threats, disturbances, and changes, not just specific ones (…). Second, resilience justice is an extension of the capabilities approach to social justice (…). The third foundation is the neo-Progressive ideological concept of anti-domination: re-framing problems of income inequality, political influence, and discrimination as problems of structurally unequal power and socially unjust domination of some groups by other groups (…). According to anti-domination theory, justice is not achieved through individual rights (remedial justice), the politics of pluralism (procedural justice), or (re)distribution of goods and resources (distributive justice), but in reform of institutions and social structures that create and perpetuate structural inequality and domination."[939]

In accordance with the perspectives of Sen[940] and Nussbaum[941], equality in the distribution of resources and contextually-subjective values are not the most adequate grounds for sustaining a theory of social justice. It is essential for social justice to be outlined by the conditions that are in the base of the essential human capabilities to function. Then, both the society and the state have moral obligations for the well-being of all humans. Nevertheless, each person must be treated as a subject with choices, values, identity, and dignity, because human beings cannot be considered as objects of a state resource-distribution scheme. Therefore, resilience justice must focus on the socio-spatial communities, which are composed by human beings, recognising that their essential human

[939] Boamah and Arnold, "Assemblages of Inequalities and Resilience Ideologies in Urban Planning" (in press).

[940] Sen, *Development as Freedom* (1999), 87-110.

[941] Nussbaum, *Women and Human Development* (2000), 11-15.

functioning depends on the capacities and resilience of those human communities and their social systems.[942]

3. When environmental rights coexist with resilience injustice

Having discussed the background, definition and ways of implementing resilience justice, it is possible to verify that the proclamation or provision of environmental rights in the legislation of a certain territory can coexist with cases of social-ecological vulnerabilities or resilience injustice.[943]

Looking at the legal constitutional reality of the world, it is possible to verify that a large number of national (or state) constitutions proclaim environmental rights and, even when they do not, infra-constitutional law[944] provides that protection, or at least some of it, to their citizens. However, very often is possible to find cases of communities whose environmental rights are not fully protected, which makes them live in highly vulnerable conditions. Rights may, in a large number of cases, be provided by constitutions or other state-created legislation and then they are not enough concretised, protected or applied.[945]

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[942] Boamah and Arnold, "Assemblages of Inequalities and Resilience Ideologies in Urban Planning" (in press).

[943] Cases of inequality in water distribution in South Africa or low-income communities affected by emissions from plants or other pollution facilities all over the world are only some examples of that.

[944] National, state or local legislation, depending on the political organization.

[945] An example of this could be the spatial segregation of urban Roma populations in Hungarian cities. See György Málovics, Remus Creţan, Boglárka Méreine-Berki, and Janka Tóth, "Socio-environmental justice, participatory development, and empowerment of segregated urban Roma: Lessons from Szeged, Hungary," *Cities*, Vol. 91 (August 2019), 137-145. Other examples are some cases in Pennsylvania, where 20 percent or more individuals live in poverty or 30 percent or more of the population is minority, and do not have access to green infrastructures, transport, or even healthy food. See more about this issue on the PDEP webpage <https://www.dep.pa.gov/PublicParticipation/OfficeofEnvironmentalJustice/Pages/PA-Environmental-Justice-Areas.aspx> (accessed on 2020.01.05).

And these cases do not happen only in countries from the developing regions of the planet, but also in those developed ones. In almost every city of the world is possible to find more than one case of resilience injustice. And that is stringently connected to inequalities within the urban space. But, as previously explained, uncertainty and instability are also other factors.[946]

This analysis demonstrates that the proclamation or providence of environmental rights in the usual sources of law is not sufficient to ensure the protection of those rights and, more than that, the implementation of a status of resilience justice in a community living in a certain territory. Therefore, it depends on public/administrative law (preferably a more adaptive one) and governance to tackle it and find new solutions for implementing or enhancing social-ecological resilience justice.

4. Conclusive synthesis

Summing up the issues discussed in this chapter, it is possible to conclude that resilience justice merges two concepts. One of them is justice, which, analysed from a social-ecological perspective, is understood as equitable access to and distribution of environmental, social, and institutional conditions on which communities depend to thrive and adapt, and the opportunities to participate meaningfully and effectively in governance decisions concerning community conditions.[947]

Resilience justice is not, therefore, a solution which intends to exclude the provision and the application of environmental rights. Instead, it is a

[946] See Ole W Pedersen, "Environmental justice in the UK: uncertainty, ambiguity and the law," *Legal Studies*, Vol. 31, Issue 2 (June 2011), 279-304.

[947] Boamah and Arnold, "Assemblages of Inequalities and Resilience Ideologies in Urban Planning," (in press).

complementary element (and in some cases also procedural), based on the access to justice and specifically grounded in the principle of equality applied to the protection of those rights. It has to do with access to environmental services, access to environmental justice, and it must be founded on equality.[948]

In fact, environmental rights can help communities to face vulnerabilities and achieve resilience justice. And the inverse reality can also happen. However, these different elements must walk hand-in-hand, if the definite goal is to protect the environment where the subjects of those rights live in and ensure that they can evolve, as social systems living together with other ecological systems, maintaining their idiosyncratic characteristics, i.e. being resilient.

This means that environmental legal systems must be more grounded in the idea of promoting a social-ecological resilience justice, based on the involvement of communities and stakeholders and more flexible legal instruments. The suggestion of a more adaptive law, which will be introduced and explained in the following chapter, may play a paramount role in this implementation and enhancement of a more effective protection of environmental rights and a coexisting achievement of resilience justice.

[948] Boamah and Arnold, "Assemblages of Inequalities and Resilience Ideologies in Urban Planning," (in press).

Chapter V – Adaptive law for resilience justice

1. Notes on legal adaptation to uncertainty

Environmental rights can play a highly relevant role in influencing legislatures and decisionmakers to improve people's well-being and protect nature, as well as creating awareness about the needs of next generations. However, they have also failed to demonstrate that they can be completely effective in guaranteeing the implementation of resilience justice and tackling social-ecological vulnerabilities and uncertainty.

To be considered as resilient, a system has to demonstrate a high level of adaptive capacity. It is a system that is characterised by having enough flexibility, redundancy, and learning capacity to adapt to the possible disturbances and surprises. However, it should not collapse or flip into other systems which could be considered as substantially different than that first one.[949]

According to Arnold, resilient systems are, therefore and generally, considered as "healthy, well-functioning, and vibrant."[950]

Therefore, the rapid and nonlinear transformations that happen in different systems, especially in ecosystems and social systems, need the intervention of social institutions that must be capable of being flexible and adaptive to different types of change. Legal institutions can be presented as a clear example of those needed institutions.[951]

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[949] See Arnold, "Resilient Cities and Adaptive Law" (2014), 246; Steve Egger, "Determining a Sustainable City Model," *Environmental Modelling & Software*, Vol. 21, Issue 9 (2006), 1237–39 <https://www.sciencedirect.com/journal/environmental-modelling-and-software/vol/21/issue/9> (accessed on 2020.01.05).

[950] Arnold, "Resilient Cities and Adaptive Law" (2014), 246.

[951] Gunderson and Holling (eds), *Panarchy* (2002); Lance H. Gunderson et al, "Water RATs (resilience, adaptability, and transformability) in lake and wetland social-ecological systems," *Ecology and Society*, Vol. 11, Issue 1 (2016), 16

However, from Arnold and Gunderson's perspective,

> "Although the change-slowing effect of law helps society to absorb shocks and disturbances up to a point, law can be brittle and maladaptive if it cannot keep up with the pace, scale, and direction of ecosocial change, such as drought and flooding patterns and effects. Likewise, law is brittle and maladaptive if it assumes and reinforces a static state that does not match ecological or social change."[952]

This means that law must find its own mechanisms of helping social and ecological systems to face vulnerability and uncertainty. Ultimately, law must be intended to play a relevant and structural role in implementing or enhancing resilience justice in the territories where it is valid and in force. It should aim to protect low-income communities from pollution and intensive land uses; prevent pollution; remediate lands and waters affecting those more vulnerable communities; promote the reuse of vacant or abandoned houses and properties; revitalise neighbourhoods; prevent gentrification; create opportunities for equal participation in decisions that affect most vulnerable communities; guarantee equal access to natural resources and common infrastructures, such as parks, green infrastructure, or transportation; and empower communities.[953]

<http://www.ecologyandsociety.org/vol11/iss1/art16/> (accessed on 2020.01.05); Per Olsson et al, "Shooting the Rapids: Navigating Transitions to Adaptive Governance of Social-Ecological Systems, *Ecology and Society*, Vol. 11, Issue 1 (2006), 18 <http://www.ecologyandsociety.org/vol11/iss1/art18/> (accessed on 2020.01.05); J.B. Ruhl, "Climate Change Adaptation and the Structural Transformation of Environmental Law," *Environmental Law Review*, Vol. 40, Issue 2 (2010), 363; Arnold and Gunderson, "Adaptive Law and Resilience" (2013), 10427.

[952] Arnold and Gunderson, "Adaptive Law and Resilience" (2013), 10427.

[953] See generally Cole and Foster, *From the Ground Up* (2001); Kathryn M. Mutz et al, *Justice and Natural Resources: Concepts, Strategies, and Applications* (Washington DC: Island Press, 2002); Craig Anthony (Tony) Arnold, *Fair and Healthy Land Use: Environmental Justice and Planning* (Chicago: American Planning Association, 2007).

2. Adaptive mechanisms

A social-ecological system which aspires to be resilient must adapt to change and uncertainty. Therefore, it is necessary for that system to develop or implement mechanisms or instruments to enable its capacity of adaptation and, consequently, its ability to become resilient and be less exposed to vulnerabilities.

In order to pursue this objective, systems must make use of adaptive mechanisms. Some of the most usual and/or effective ways of implementing or enhancing resilience in different systems have been through the following mechanisms or approaches: adaptation; adaptive management; adaptive planning; adaptive governance; and adaptive law.[954] These mechanisms will be presented on the next pages.

2.1. Adaptation

According to Nelson, Adger, and Brown, adaptation is "a process of deliberate change in anticipation of or in reaction to external stimuli and stress."[955]

Therefore, analysing adaptation through a systems-based[956] approach is also assessing the human actions intended to reduce vulnerabilities and answer environmental or climate change by the means of systemic features of adaptive capacity, learning capacity, and transformational capacity. Adaptation can only be achieved or concretised in a social-ecological system if institutions, communities and societies thrive to develop their adaptive capacities.[957]

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[954] Arnold, "Environmental Law, Episode IV: A New Hope?" (2015), 17.

[955] Donald R. Nelson et al, "Adaptation to Environmental Change: Contributions of a Resilience Framework," *Annual Review of Environment and Resources*, Vol. 32 (2007), 395.

[956] Or "resilience-based approach". See Arnold, "Environmental Law, Episode IV" (2015), 17.

[957] Arnold, "Environmental Law, Episode IV" (2015), 17; Nelson, Adger, and Brown, "Adaptation to Environmental Change" (2007), 395.

An example where adaptation plays a relevant role is the case of climate change. It is a kind of changes in the environment to which humans have been trying to adapt, through different means. Actually, IPCC has defined adaptation as an

> "adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change." [958]

It involves adjustments to reduce the vulnerability of communities, regions, or activities to climatic change and variability and it has been a dominant policy response to climate change.[959]

In legal literature, a large number of authors increasingly tends to focus on the issues related to environmental law and adaptation from a climate change perspective.[960] Classic examples of using adaptation approach for climate change can be those related to coastal communities which face sea-level rise or changing intensities and frequencies of hurricanes and storm surge. These responses

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[958] James J. McCarthy et al (eds.), *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, (Cambridge: Cambridge University Press, 2001), 881.

[959] See Arnold, "Environmental Law, Episode IV" (2015), 17; William E. Easterling III, Brian H. Hurd, Joel B. Smith, "Coping With Global Climate Change: The Role of Adaptation in the United States," *Pew Center on Global Climate Change* (June 2004) <https://www.c2es.org/site/assets/uploads/2004/06/role-adaptation-united-states.pdf> (accessed on 2020.01.05); Robert Mendelsohn, "Efficient Adaptation to Climate Change," *Climatic Change*, Vol. 45 (2000), 583.

[960] See, for example, Michael B. Gerrard, and Katrina Fischer Kuh, *The Law of Adaptation to Climate Change: United States and International Aspects* (Chicago: American Bar Association, 2012); Ruhl, "Climate Change Adaptation and the Structural Transformation of Environmental Law" (2010), 363; Robin Kundis Craig, "'Stationarity Is Dead' – Long Live Transformation: Five Principles for Climate Change Adaptation Law," *Harvard Environmental Law Review*, Vol. 34, Issue 1 (2010), 68; Raina Wagner, "Adapting Environmental Justice: In the Age of Climate Change, Environmental Justice Demands a Combined Adaptation-Mitigation Response," *Arizona Journal of Environmental Law and Policy*, Vol. 2 (2012), 153; Victor B. Flatt, "Adapting Laws for a Changing World: A Systemic Approach to Climate Change Adaptation," *Florida Law Review*, Vol. 64 (2012), 269.

usually involve armouring, beach renourishment programmes, new land-development codes, dune and vegetation restoration, or retreat strategies.[961]

Simultaneously, in the fields of water management, the increasing changes in precipitation and temperature patterns in different parts of the world also require innovative policies and rules regarding the use of water, water transfers, risk management for public water supplies and agricultural water supplies, instream flow protection and management, and protection of aquatic species.[962]

However, adaptation strategies cannot be used in all situations and have significant limits. These strategies are also able to distract policy and decisionmakers, resource users, and communities from taking the necessary steps to mitigate the causes of climate change, especially regarding the emissions of GHG.[963]

At the same time, it has been also understood that those strategies may, in some cases, underestimate the possible distributional inequities in the capacity of adaptation and the effects of adaptation actions, while giving more importance to scientific knowledge and institutional performance in achieving effective adaptation.[964] There is also the possibility for these strategies to create themselves

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[961] Arnold, "Environmental Law, Episode IV" (2015), 18; Arnold, "Legal Castles in the Sand" (2011), 213-260. For more information on adaptation plans for coastal communities in the United States area, see the National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management's "Adapting to Climate Change: A Planning Guide for State Coastal Managers" <https://coast.noaa.gov/data/digitalcoast/pdf/adaptationguide.pdf> (accessed on 2020.01.05).

[962] Arnold, "Legal Castles in the Sand" (2011), 213-260; and generally, Holly Doremus, and Michael Hanemann, "The Challenges of Dynamic Water Management in the American West," *UCLA Journal of Environmental Law and Policy*, Vol. 26 (2008), 55.

[963] Arnold, "Environmental Law, Episode IV" (2015); Ruhl, "Climate Change Adaptation" (2010), 365-68.

[964] Anthony Dan Tarlock, "Now, Think Again About Adaptation," *Arizona Journal of International and Compared Law*, Vol. 9 (1992), 170-171.

adverse or negative impacts on the environment and increase the effects of climate change.[965]

This means that, if one intends to analyse adaptation strategies from a resilience perspective, those solutions seem to be too narrow in order to achieve the objectives of resilience justice.

According to Ruhl, systemic transformations that increase the adaptive capacity of legal and governance institutions, human communities, and ecosystems to navigate instability and change – such as multiscalar governance networks, transition-based resource strategies, more integration of land use, water law, and environmental law, enhanced flexibility in regulatory instruments, property rights, and liability rules, and shifts from up-front planning to backend adaptive management methods – are needed. Nevertheless, the author also acknowledges one major problem with this solution. In some situations, adaptation strategies can be limited to mere proactive risk reduction plans, such as:

> "crop and livelihood diversification, seasonal climate forecasting, community-based disaster risk reduction, famine early warning systems, insurance, water storage, [and] supplementary irrigation."[966]

Moreover, they can even represent simple reactive responses to climate change, such as "emergency response, disaster recovery, and migration."[967] Consequently, other approaches are necessary in order to complete adaptation and face vulnerabilities generated by uncertainty and unpredictability.

For example, Eakin et al argue that there are two forms of capacity to adapt to global change, which are those associated with fundamental human

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[965] Matthew D. Zinn, "Adapting to Climate Change: Environmental Law in a Warmer World," *Ecology Law Quarterly*, Vol. 34 (2007), 63.

[966] Ruhl, "Climate Change Adaptation" (2019), 383.

[967] Ruhl, "Climate Change Adaptation" (2019), 378-383; McCarthy et al, *Climate Change 2001* (2001), 721.

development goals, and those necessary for managing and reducing specific climatic threats. The authors consider that both domains of capacity must be addressed explicitly, simultaneously and iteratively, explaining that a better and more strategic balance of generic and specific capacities is needed if the promised synergies between sustainable development and adaptation are to be achieved.[968]

2.2. Adaptive management

Other approach that can be presented is the concept of adaptive management, which was developed by Holling.[969]

Arnold defines it as

> "a method of managing natural resources or ecosystems as a flexible, continuous set of experiments or learning processes, under conditions of uncertainty and incomplete knowledge, with feedback loops that lead to adjustments in management actions."[970]

It is a management system, composed of iterative processes, which accepts that all knowledge is provisional, and that the management of resources consists of a

[968] H.C. Eakin et al, "Differentiating capacities as a means to sustainable climate change adaptation," *Global Environmental Change*, Vol. 27 (July 2014), 1-8.

[969] For a more comprehensive analysis of the concept, see generally, C.S. Holling (ed.), *Adaptive Environmental Assessment and Management* (Chichester: Wiley, 1978).

[970] Arnold, "Environmental Law, Episode IV" (2015), 19. See also Bradley C. Karkkainen, "Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward a Bounded Pragmatism," *Minnesota Law Review*, Vol. 87 (2003), 946-956; Holly Doremus, "Precaution, Science, and Learning While Doing in Natural Resource Management," *Washington Law Review*, Vol. 82 (2007), 568-579; Alejandro E. Camacho, "Adapting Governance to Climate Change: Managing Uncertainty Through a Learning Infrastructure," *Emory Law Journal*, Vol. 59 (2009), 16-24; Robert L. Glicksman, "Ecosystem Resilience to Disruptions Linked to Global Climate Change: An Adaptive Approach to Federal Land Management," *Nebraska Law Review*, Vol. 87 (2008), 865-891; Robin Kundis Craig, and J.B. Ruhl, "Designing Administrative Law for Adaptive Management," *Vanderbilt Law Review*, Vol. 67 (2014), 16-26.

number of experiments that receive feedback loops through continuous monitoring, learning, and changes to actions based on the lessons learned.[971]

Therefore, in this approach, actions are not all planned on the front end based on extensive and detailed pre-action study with its forecasts of the future, analyses of options, and selection of preferred goals and strategies. Instead, adaptive management of resources and environments goes through an evolving process, and decisions are taken as managers learn while doing.[972]

Although adaptive management is as a rather widely popular approach in environmental and resource management, it is often considered as practiced poorly or incompletely.[973] One of the major critiques is that the legal system deters officials from using effectively adaptive management in practice. The reason would be its up-front prescriptive requirements and planning processes, as well as back-end liabilities for failed management actions.[974]

In effect, Ruhl and Fischman explained that courts have been enthusiastic about adaptive management in theory. Nonetheless, they have also shown to be often dissatisfied with the poor crafting of adaptive management procedures by agencies, which ignore substantive legal standards.[975]

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[971] Arnold, "Environmental Law, Episode IV" (2015), 20. See also generally, Holling, *Adaptive Environmental Assessment and Management* (1978).

[972] Arnold, "Environmental Law, Episode IV" (2015), 20; Doremus, "Precaution, Science, and Learning While Doing in Natural Resource Management" (2007), 547.

[973] Camacho, "Adapting Governance to Climate Change" (2009), 25-36; Melinda Harm Benson, "Adaptive Management Approaches by Resource Management Agencies in the United States: Implications for Energy Development in the Interior West," *Energy and Natural Resources Law*, Vol. 28 (2010), 88; J.B. Ruhl, and Robert L. Fischman, "Adaptive Management in the Courts," *Minnesota Law Review*, Vol. 95 (2010), 426.

[974] See J.B. Ruhl, "Regulation by Adaptive Management – Is It Possible?," *Minnesota Journal of Law, Science & Technology*, Vol. 7 (2005), 21-57.

[975] For a more nuanced perspective, see Ruhl and Fischman, "Adaptive Management in the Courts" (2010), 427.

Some more sceptical authors, such as Biber, have also argued that conducting major revisions to environmental law in order to authorize or accommodate adaptive management would be highly uncertain to produce positive the intended environmental outcomes. Moreover, they would even be too likely to result in more negative than positive environmental outcomes.[976]

In addition to that, Arnold considers that

> "adaptive management focuses narrowly on management actions taken by resource management officials. Adopting adaptive management strategies does not increase flexibility or adaptive capacity in the laws, governance systems, or institutions that set broad public policies and define the sociopolitical boundaries and space in which resources are managed. Adaptive management is not adequate by itself. Adaptive planning processes, adaptive legal frameworks, and adaptive governance institutions are needed for social-ecological resilience."[977]

Summing up the arguments presented, adaptive management also fails to be sufficient to help law in the task of contributing to achieve resilience justice.

2.3. Adaptive planning

A third approach that must be discussed under this issue is adaptive planning. It consists of an iterative and evolving process of identifying goals and making decisions about future actions that:

a) are flexible;
b) contemplate uncertainty and multiple possible scenarios;

[976] Eric Biber, "Adaptive Management and the Future of Environmental Law," *Akron Law Review* 46 (2013), 945-956.
[977] Arnold, "Environmental Law, Episode IV" (2015), 20-21.

c) include feedback loops for frequent modification to plans and their implementation; and
d) build planning, management, and governance capacity to adapt to change.[978]

The adaptive planning approach is expressly dedicated to plans for the processes of ongoing planning, plan modification, and plan implementation through management actions.[979]

Arnold defines it as an approach that

> "builds multiple iterations of feedback loops and planned decision making into the process, which are aimed at preventing a single set of goals and strategies from becoming rigidly ingrained in an institution or organization, and at forcing planners and decision makers to monitor and evaluate the impacts of plan implementation under changing conditions so that goals, strategies, and implementation actions can be adjusted accordingly. Planning is continuous, event-driven, and feedback-driven. Adaptive planning is highly participatory and relatively decentralized, pushing as many decisions as possible to smaller units that are most affected by those decisions and to those who will be implementing the plan to make at-the-time adjustments under the conditions that exist during implementation. The planning process facilitates the emergence and use of self-organizing systems of planning and decision making. The substantive content of the plan is highly flexible, containing multiple goals, multiple options, multiple criteria for making implementation decisions or future planning decisions,

[978] Arnold, "Environmental Law, Episode IV" (2015), 21; Arnold, "Adaptive Watershed Planning and Climate Change" (2010), 440-444.
[979] Arnold, "Environmental Law, Episode IV" (2015), 21; Arnold, "Adaptive Watershed Planning and Climate Change" (2010). 440.

> consideration of systemic complexities and instabilities, and diversity of perspectives and knowledge."[980]

Many authors have discussed the theory and processes of adaptive planning.[981] Actually, it consists of a distinct type of planning that contrasts with conventional up-front development of comprehensive static plans.[982]

According to Rzevski the following contrasts should be emphasised, regarding conventional and adaptive planning:

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[980] Arnold, "Environmental Law, Episode IV" (2015), 22; See also Arnold, "Adaptive Watershed Planning and Climate Change" (2010), 440-444.

[981] See generally Eirini Skrimizea et al, "On the 'complexity turn' in planning: An adaptive rationale to navigate spaces and times of uncertainty," *Planning Theory* (June 2018) <https://journals.sagepub.com/doi/full/10.1177/1473095218780515> (accessed on 2020.01.05); Sadahisa Kato and Jack F. Ahern, "'Learning by doing': adaptive planning as a strategy to address uncertainty in planning," *Journal of Environmental Planning and Management*, Vol. 51, Issue 4 (July 2008), 543-559; George Rzevski, "Keynote Address to the Russian Academy of Science: Planning under Conditions of Uncertainty," in E.A. Fedosov, N.A. Kuznetsov, and V.A. Vittikh (eds.) *Complex Systems: Control and Modelling Problems, Russian Academy of Sciences* (Samara: 22-28 June 2007), 3-12; Jules N. Pretty and Ian Scoones, "Institutionalizing Adaptive Planning and Local-Level Concerns: Looking to the Future," in Nici Nelson and Susan Wright (eds.), *Power and Participatory Development: Theory and Practice* (London: Intermediate Technology Publications, 1995), 157; Helen Briassoulis, "Theoretical Orientations in Environmental Planning: An Inquiry into Alternative Approaches," *Environmental Management*, Vol. 13 (1989), 386-387; K. Matthias Weber, "Foresight and Adaptive Planning as Complementary Elements in Anticipatory Policy-making: A Conceptual and Methodological Approach," in Jan-Peter Voß, Dierk Bauknecht, and René Kemp (eds.), *Reflexive Governance for Sustainable Development* (Cheltenham: Edward Elgar, 2006), 189; Robert M. Klein, "Adaptive Planning: Not Your Great Grandfather's Schlieffen Plan," *Joint Force Quarterly*, Vol. 45 (2007), 86; Nina-Marie E. Lister, and James J. Kay, "Celebrating Diversity: Adaptive Planning and Biodiversity Conservation," in Stephen Bocking (ed.), *Biodiversity in Canada: Ecology, Ideas, and Action* (Peterborough: Broadview Press, 2000), 189; Jack Ahern, "Theories, Methods and Strategies for Sustainable Landscape Planning," in Bärbel Tress, Gunther Tres, Gary Fry, and Paul Opdam (eds.), *From Landscape Research to Landscape Planning: Aspects of Integration, Education, and Application* (Dordrecht: Springer, 2006), 119; Paramjit S. Sachdeva, "Development Planning – An Adaptive Approach," *Long Range Planning*, Vol. 17 (1984), 96.

[982] Arnold, "Environmental Law, Episode IV" (2015), 22; Arnold, "Adaptive Watershed Planning and Climate Change" (2010)., 446-447.

a) conventional planning seeks to form only the optimal plan, whereas adaptive planning includes as many options as practical in the plan;
b) conventional planning seeks to avoid redundancy of resources, whereas redundancy of resources is planned in adaptive planning;
c) conventional planning mandates that the plan be followed for a specified time, whereas adaptive planning provides for the continuous modification of the plan to accommodate changes in the operational environment;
d) conventional planning has centralized decision making, whereas adaptive planning occurs by decentralized self-organization;
e) conventional planning requires that the activities contemplated by the plan be executed within a specified period, whereas adaptive planning allows for executable activities to emerge from negotiations between constituent decision makers; and
f) conventional planning typically applies a single criterion to all activities, whereas adaptive planning allows for the balancing of or selection from among multiple decision criteria, against which to evaluate each activity.[983]

Adaptive planning is also different that adaptive management. Both approaches demonstrate to have similar features, such as flexibility, iteration of processes, multiple options, and scientific and social learning through feedback loops, adaptive management tends to disregard the role of planning and goal-setting. Nevertheless, adaptive planning processes intend to avoid standardless drift in management activities. At the same time, it tries to address the existent

[983] Rzevski, "Keynote Address to the Russian Academy of Science: Planning under Conditions of Uncertainty" (2007), 4; Arnold, "Environmental Law, Episode IV" (2015), 22-23.

interconnections between social or governance goal-setting and day-to-day management actions.[984]

This approach has been increasingly used in the last years, particularly in the United States and Canada, in the fields of watershed planning and water supply planning in anticipation of climate change and its effects on watershed conditions and water supplies.

Regarding the application of adaptive planning to the reality of watersheds, Arnold argues that

> "These examples of adaptive watershed planning for climate change show some promise for how environmental law can evolve, and new forms of adaptive processes can emerge to address the uncertainties created by adaptive cycles and complex inter-system dynamics. However, there is some reason to be concerned that feedback loops will be underutilized in actual practice, just as they are in adaptive management."[985]

Another problem identified by the author is that adaptive plans might erroneously generate flexibility into their content and also in planning processes by simply adopting vague goals and sometimes failing to making hard choices.[986] And when the issues in analysis are related to nature or climate change, there is always the risk of the results to be irreversible.

In addition to what was already argued, adaptive planning must be based on concrete and rigorous standards so that decision makers and implementers can

[984] Arnold, "Environmental Law, Episode IV" (2015), 23; Arnold, "Adaptive Watershed Planning and Climate Change" (2010), 421, 439.

[985] Arnold, "Environmental Law, Episode IV" (2015), 23; Arnold, "Adaptive Watershed Planning and Climate Change" (2010), 482-483.

[986] Arnold, "Environmental Law, Episode IV" (2015), 23-24.

determine if goals are being met and if social-ecological resilience is improving or not.[987]

One of the difficulties of adaptive planning is that broad goals and flexible processes by themselves are not enough to ensure that communities and organizations change their behaviours, especially those that can be harming the environment, territories or even their communities. Very often it is not in their immediate self-interest to change their habits and practices.

Therefore, as Arnold explains, adaptive planning must be implemented in an integrated way, with some system of rules and rule enforcement. However, it is essential to guarantee that this integration does not occur in such a way that rigidity in the legal system eliminates the adaptive capacity of the planning and management processes. Simultaneously, adaptability must not clash with the always needed legal certainty.[988]

2.4. Adaptive governance

Human and natural environments, or linked social and ecological systems, are governed by humans, being subject to environmental law frameworks in that activity of governance. As a consequence, an adaptive and resilience-building environmental law system should be one that creates the necessary boundaries and space in which adaptive governance emerges.[989]

After having studied a growing literature on adaptive governance from many different disciplines, Chaffin, Gosnell and Cosens developed a synthesized definition of adaptive governance, which should consist of "a range of

[987] Arnold, "Environmental Law, Episode IV" (2015), 24; Arnold, "Adaptive Watershed Planning and Climate Change" (2010), 480-81, 484-86.
[988] Arnold, "Environmental Law, Episode IV" (2015), 24.
[989] Arnold, "Environmental Law, Episode IV" (2015), 27.

interactions between actors, networks, organizations, and institutions emerging in pursuit of a desired state for social-ecological systems."[990]

These authors based their understanding on other relevant definitions of adaptive governance, which include by Dietz, Ostrom, and Stern's idea of "managing diverse human-environmental interactions in the face of extreme uncertainty."[991]

However, their concept was also formulated upon the perspective of Walker et al, which is that of a "process of creating adaptability and transformability in social-ecological systems and the evolution of rules that influence resilience during self-organization."[992]

In the same way, Scholz and Stiftel influenced that definition. For these authors, the concept is defined by

> "the evolution of new governance institutions capable of generating long-term sustainable policy solutions to wicked problems through coordinated efforts involving previously independent systems of users, knowledge, authorities, and organized interests."[993]

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[990] Brian C. Chaffin et al, "A Decade of Adaptive Governance Scholarship: Synthesis and Future Directions," *Ecology and Society*, Vol. 19, Issue 3 (2014), 56 <https://www.ecologyandsociety.org/vol19/iss3/art56/> (accessed on 2020.01.10).

[991] Thomas Dietz et al, "The struggle to govern the commons," *Science*, Vol. 302, Issue 5652 (2003), 1907-1912.

[992] Brian Walker et al, "Resilience, adaptability and transformability in social-ecological systems," *Ecology and Society*, Vol. 9, Issue 2 (2004), 5 <http://www.ecologyandsociety.org/vol9/iss2/art5> (accessed on 2020.01.05).

[993] John T. Scholz and Bruce Stiftel. "Introduction: The Challenges of Adaptive Governance," in J.T. Scholz, and B. Stiftel (eds.), *Adaptive governance and water conflict: new institutions for collaborative planning* (Washington, D.C.: Future Press, 2005), 1-14.

However, all these scholarly definitions seem to be quite broad and general. They aim to include everything and, simultaneously, end up being vague and confusing to governance participants who intend to implement this concept.[994]

In this sense, Nelson, Adger, and Brown tried to find a fairly clearer definition of what adaptive governance means, arguing that:

> "[s]uccessful adaptation in effect entails steering processes of change through institutions, in their broadest sense. For adaptation to be successful, institutions clearly need to endure and be persistent throughout the process of adjustment and change. But at the same time, they need themselves to cope with changing conditions (…). [T]he strong normative message from resilience research is that shared rights and responsibilities for resource management (often known as comanagement) and decentralization are best suited to promoting resilience (…). The 'pinnacle' of comanagement is the idea that governance systems themselves can be adaptable through internal learning – both institutional arrangements and ecological knowledge should be 'tested and revised in a dynamic, ongoing, self-organized process of trial and error' facilitated through high levels of autonomy and decentralization."[995]

Moreover, it could be possible to define the concept adaptive governance through its specific features. Nonetheless, several scholars have suggested different lists of features that an adaptive governance system should include. Even though, most of the literature tends to converge around similar ideas and common themes.[996]

[994] Arnold, "Environmental Law, Episode IV" (2015), 28.

[995] Nelson et al, "Adaptation to Environmental Change" (2007), 409.

[996] Arnold, "Environmental Law, Episode IV" (2015), 28.

In accordance to Chaffin, Gosnell and Cosens's formulation, the concept of adaptive governance is scaled to the social or ecological systems influencing the problems that it intends to address:

a) Being polycentric concept (having multiple centres of power), redundant in function, diverse, and connected across scales through networks;
b) Using adaptive management methods; and
c) Emerging from self-organizing activity.[997]

From Scholz and Stiftel's perspective, the following features should be emphasised:

a) getting representation of interests or stakeholders that there is sufficient to have buy-in to governance decisions but not unduly burdensome on governance structures and processes;
b) decision processes that are characterized by flexibility, legitimacy, transparency, expertise, trust, and accountability;
c) scientific learning;
d) public learning; and
e) policy decisions and implementation that respond well to the problem as measured by efficiency, equity, an appropriate trade-off of adaptability with stability, and conservation of natural resources.[998]

From another point of view, Huitema et al consider that adaptive institutions must be characterised by polycentric governance, public participation, experimentation, and a bioregional perspective.[999]

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[997] Chaffin et al, "A Decade of Adaptive Governance Scholarship" (2014), 56.
[998] Scholz and Stiftel, "Introduction: The Challenges of Adaptive Governance" (2005), 5-10.
[999] Dave Huitema et al, "Adaptive Water Governance: Assessing the Institutional Prescriptions of Adaptive (Co-) Management from a Governance Perspective and Defining a Research Agenda," *Ecology & Society*, Vol. 14, Issue 1 (2009), 26 <http://www.ecologyandsociety.org/vol14/iss1/art26/> (accessed on 2020.01.06).

After leading an interdisciplinary study in the Anacostia River Basin that gave particular attention to the dynamics of and capacity for institutional change in relationship to social system change and ecosystem change,[1000] Arnold argues that some of the adaptive characteristics of new watershed governance systems in the particular case of the Anacostia River Basin are the following:

a) scaling of governance to multiple ecological or ecosystem scales (multiscalar and scaled to the problems to be addressed);
b) polycentric and modular governance structures;
c) highly participatory decision making and implementation processes;
d) use of multiple methods and instruments (multi-modality);
e) diversity in innovation and experimentation;
f) redundancy of efforts and resources;
g) loose but active networks across scales and nodes of governance activity;
h) use of conflict, litigation, and legal processes to develop cooperative problem solving;
i) iterative processes; and
j) feedback loops that increase scientific and social learning.[1001]

The author also emphasises that that the concept of adaptive governance consists of "an emergent phenomenon that is shaped, supported, or deterred by features of the legal system."[1002]

The concept of "governance" includes both governmental and nongovernmental participation in collective choice, decision and action. Legal systems usually dictate the structure, boundaries, rules, and processes within which

[1000] Arnold et al, "The Social-Ecological Resilience of an Eastern Urban-Suburban Watershed" (2014), 29-90.
[1001] Arnold et al, "The Social-Ecological Resilience of an Eastern Urban-Suburban Watershed" (2014), 36.
[1002] Arnold, "Environmental Law, Episode IV" (2013), 30.

governmental action takes place, and become focal points for analysis of barriers to adaptation as the effects of climate change are felt. Therefore, adaptive governance must contemplate flexibility and evolution in governmental action beyond what exists in heavily administrative governments. In fact, law has proven to be adaptive in western systems of government, evolving to address and even facilitate the emergence of new social norms[1003] or to provide remedies for emerging problems.[1004] Making use of the characteristics identified for the Anacostia River Basin, also law can adapt, evolve, and be reformed to make room for adaptive governance. Therefore, barriers can be removed and also law may be adjusted to give space for adaptive governance and to aid in institutionalising new approaches to governance. It is essential to do so in a way that enhances legitimacy, accountability, and justice. Otherwise, such reforms will never be adopted by democratic societies, or if they are adopted, they will destabilise those societies.[1005]

Many aspects of law and institutions can influence adaptation and self-organisation, by affecting flexibility and governance authority (even if indirectly, such as common law[1006] – where it exists –, property law[1007], and law governing judicial decision making.[1008] Legal instruments can operate in different domains and at a variety of scales. For instance, grassroots watershed organisations in the US often use the Clean Water Act as a basis for their legal authority to monitor and enforce water management activities of actors in their watersheds, creating

[1003] Such as the rights of women and those regarding minorities.

[1004] Such as pollution or the depletion of the ozone layer.

[1005] Cosens et al, "The role of law in adaptive governance" (2017), 1-12.

[1006] J.B. Ruhl, "General design principles for resilience and adaptive capacity in legal systems: applications to climate change adaptation law," *North Carolina Law Review*, Vol. 89 (2011), 1374-1401; Olivia Odom Green et al, "A multi-scalar examination of law for sustainable ecosystems," *Sustainability*, Vol. 6, Issue 6 (2014), 3534-3551.

[1007] Doremus and Hanemann, "The challenges of dynamic water management in the American West" (2008), 55-75.

[1008] Arnold and Gunderson, "Adaptive Law and Resilience" (2013), 10426-10443.

indirect state-reinforced self-governance, or legally binding authority, which better enables grassroots organizations to emerge and self-organise. [1009]

These are only some examples of cases where adaptive governance is used. All territories and communities have their particular characteristics and need approaches that specifically adapt to those special realities, but law can play and increasingly important role for the implementation of adaptive governance. Therefore, analysing these cases in the future, and comparing with different realities would provide rigorous tests for design principles, identify important areas for refinement and addition, and more fully inform adaptive governance, which would naturally improve social-ecological resilience.[1010]

2.5.Adaptive law

According to Arnold and Gunderson, a legal system may be understood as maladaptive or adaptive. Adaptive law appears as a new resilience-based paradigm, to replace features of the legal system that are rigid, ignore interrelationships among social and ecological systems, emphasize front-end prescriptive rules, and generally are ill-equipped to adapt to rapid, unexpected change.[1011]

In an analysis of the US legal system, the authors explain that the maladaptive characteristics of that system could be demonstrated by the following four large categories of features:

[1009] For example, see Arnold et al, "The social-ecological resilience of an eastern urban-suburban watershed: the Anacostia River Basin" (2014.), 29-90.

[1010] DeCaro et al, "Legal and institutional foundations of adaptive environmental governance" (2017), 32. See also, in this area, Arnold et al, "Cross-interdisciplinary insights into adaptive governance and resilience" (2017), 14.

[1011] Arnold and Gunderson, "Adaptive Law and Resilience" (2013), 10429-31.

a) systemic goals that can be described as narrow;
b) a structure that is monocentric (due to centralisation of authority to solve problems), unimodal (due to the use of single, uniform models as solutions to problems), and fragmented;
c) inflexible methods that employ rules, legal abstractions, and promote resistance to change; and
d) rational, linear, legal-centralist processes that assume away uncertainty.

These categories of features are faced with four categories, which would characterise an adaptive legal system. Those other four categories of features are the following:

a) multiplicity of articulated goals;
b) polycentric, multimodal, and integrationist structure;
c) adaptive methods based on standards, flexibility, discretion, and regard for context; and
d) iterative legal-pluralist processes with feedback loops, learning, and accountability.[1012]

In order to summarise the essential features of an adaptive law system, Arnold presents an overview, including: (i) adaptive goals; (ii) adaptive structure; (iii) adaptive methods; and (iv) adaptive processes.

With regard to *adaptive goals*, it is essential to clarify that adaptive law aims to achieve multiple co-existent forms of resilience, through an idea of poly-resilience. In particular, a legal system that is considered as adaptive to change serves to strengthen the adaptive capacity of social systems (including institutions and communities), but also ecological systems (or ecosystems). This is important because the healthy functioning and adaptive capacity of various aspects of society (economy, political system, culture) and the healthy

[1012] For all, Arnold and Gunderson, "Adaptive Law and Resilience" (2013), 10428.

functioning and adaptive capacity of various ecosystems (as watersheds, forests, and wetlands) are interdependent. Within the complexity of systems that is the environment, if the legal system merely aims to advance the specific stability of just a single system, it risks harming all systems and contributing to the decline and collapse of both natural and human communities.

In what concerns the *adaptive structure*, the adaptive law system must be understood as being polycentric, diversifying exposure to risk, creating redundancies to absorb shock, and facilitating adaptive innovation by spreading power and authority among multiple centres. In this case, power and authority must not be concentrated in a single centre, such as a federal or national government or the legislative branch, regardless of the usual temptation to overcome the perceived ineffectiveness of more diffused power. In fact, one single misjudgement by an all-powerful entity, which is virtually inevitable given the cognitive limitations of humans and structural limitations of human organizations, is likely to create a cascade of failure and collapse throughout all multiple systems which are naturally interconnected. On the other hand, polycentric systems difficult failure and collapse to happen or spread. A relevant characteristic of an adaptive law system is the using of multiple modes, methods, or instruments to address problems at multiple scales, instead of selecting a single "optimal" mode, method, or instrument that may fail or a single scale of governance that could be mismatched to the multiscalar features of always complex problems. Participated legislation or decision- and law-making based on monitoring results and feedback loops are only some examples which can easily fit in the presented features. However, and because social and ecological realities are different, also different solutions have to be applied.

Actually, there are no "optimal" panaceas in adaptive governance systems (no cookie-cutter, one-size-fits-all, or magic-bullet solutions). Even though, an adaptive law system aims for loose integration among the multiple centres of

decision and scales of governance and the multiple methods or instruments that can be used, in contrast to the relatively fragmented characteristics of a maladaptive legal system.

On the feature of adaptive methods, an adaptive law system intends to facilitate social and ecological resilience through moderate evolution in rules, standards, processes, and structures as the system adapts to changing conditions. The reality of change is neither resisted nor undertaken quickly and sweepingly. Therefore, an adaptive legal system uses context-regarding standards and flexible discretionary decision-making solutions, in contrast to legal abstractions, rigid rules, and excessive limits on action and authority. It also has a high tolerance for uncertainty, whereas most of current legal systems tend to demand certainty, which is incompatible with environmental or climate realities. In effect, attempts to achieve certainty of outcomes, adhere to universally applicable rules, and prevent abuses of power are usually maladaptive when they fail to recognise that decision-makers and actors in a system need more flexibility,[1013] discretion, and authority, in order to respond to new situations and realities, adapt to changing conditions, and experiment with various possible solutions to public problems.

One might ask how abuses can be prevented within adaptive frameworks. Nevertheless, the answer is evident: an adaptive framework must live together with conventional legal frameworks. It is only one part of the whole system. It is not *the* solution, but it is one additional and important solution, which improves the way environmental law deals with complexity, uncertainty, instability, and inequalities.

In respect to adaptive processes, Arnold argues that an adaptive law system should recognises and embrace iterative processes among multiple participants,

[1013] From a more constitutional perspective, on an additional factor of flexibilization of the normative force Portuguese Constitution, see Rui Medeiros, *A Constituição Portuguesa num Contexto Global* (Lisboa: Universidade Católica, 2019), 204-207.

instead of linear decision-making and implementation processes by an only and single authority. It recognises limits to human and organisational rationality and the effects of social and ecological elements and forces on the ordering and management of human affairs, whereas a maladaptive law system presumes that all decision-making is rational and that the law is absolutely central to the ordering and management of human affairs. Nevertheless, there can be a large number of potential adverse effects from bounded human knowledge and rationality and the broad discretion of decision makers and actors in iterative processes that are not tightly constrained by law. An adaptive law system therefore limits these effects by mandating feedback loops by which the effects of decisions and actions are monitored, assessed and evaluated, lessons learned, and decisions or actions can be altered on the basis of those lessons or results.[1014] On the other hand, an adaptive legal system also limits those negative effects through utilising accountability mechanisms (such as monitoring, multiscalar decisions or multistakeholder participation) for the conservation of natural, human, social, political, and economic capital so that the functions of the basic infrastructure that supports nature and society are not impaired.[1015]

Legal systems have demonstrated a need to improve adaptive capacity, especially in the fields of environmental law. Nevertheless, a legal system cannot be responsible *per se* for ordering or commanding the implementation of social-ecological resilience. As Arnold argues, "[l]aw is not an autonomous system apart from governance institutions in society generally, nor is it an all-controlling centre of power in a tightly hierarchical system."[1016] Therefore, specifically

[1014] In this part, the increasing use of data can play an essential role in improving decision- and also law-making.

[1015] For all, see Arnold, "Environmental Law, Episode IV: A New Hope?" (2015), 24-27; Arnold and Gunderson, "Adaptive Law and Resilience" (2013), 10428-10442.

[1016] Arnold, "Environmental Law, Episode IV: A New Hope?" (2015), 27.

adaptive legal systems are required, but also adaptive governance systems generally.

In fact, legal systems can either facilitate or inhibit adaptive governance decisions, depending on their grade of adaptive capacity as legal systems. Simultaneously, social-ecological systems can strengthen their resilience if there is interconnected adaptability between all ecological, social and institutional systems that are involved in a certain territory.

A way of better understanding the specific characteristics and also the differences between maladaptive and adaptive legal systems is to analyse the following Table 7, introduced by Arnold and Gunderson.

Table 7: Features or characteristics of Maladaptive Law and Adaptive Law[1017]

Feature	Maladaptive Law	Adaptive Law
Goals	Legal regimes aim to advance particular stability of single systems. Current regimes focus primarily on political and economic goals. Alternative (reform) regimes focus primarily on ecological goals.	Legal regimes aim for multiple forms of resilience: the resilience and adaptive capacity of both social and ecological systems, including constituent subsystems, such as institutions and communities.
Structure	Law is monocentric, utilizing fragmented and unimodal responses to problems.	Law is polycentric, utilizing multimodal and multiscalar responses to problems that are loosely integrated.
Methods	Law controls society through rules, limits on action and authority, demand for certainty, and legal abstractions that resist change.	Law facilitates social and ecological resilience through moderate/evolutionary adaptation to changing conditions, context-regarding standards, tolerance for uncertainty, and flexible discretionary decision-making.
Processes	Law presumes rational, linear decision-making and implementation processes by a single authority and the centrality of law to the ordering and management of human affairs.	Law recognises and embraces iterative processes with feedback loops among multiple participants, limits to human and organisational rationality, and the effects of social and ecological forces on the ordering

[1017] Arnold and Gunderson, "Adaptive Law and Resilience" (2013), 10429.

		and management of human affairs, and accountability mechanisms for the conservation of capital.

3. Why adaptive law?

Non-linearity in developments within the legal system and the specific interactions between law and the environment could be labelled of what Teubner considered a blind co-evolution with social systems. In fact, legal scholars and even those who apply the law, especially to the environment, experience some disappointment when law is only treated as a means of direct social intervention.[1018] As Luhmann asserted, legal systems try to solve "a problem in relation to time" by making it possible to stabilise normative expectations.[1019] However, with more complex, uncertain, and unstable realities, this role of law is becoming more difficult. Very often, developments in law correspond to some reaction to existent problems and less to predict or to be prepared to adapt to what may happen.

Adaptive legal regimes are, therefore, the best legal frameworks capable of fostering the management of resilience: the resilience of ecosystems and adaptive capacity of both social and ecological systems, including constituent subsystems, such as institutions and communities.[1020]

According to Arnold and Gunderson:

[1018] Gunther Teubner, *Law as an Autopoietic System* (Ann Bankowska, Ruth Adler trs., Oxford: Blackwell, 1993), 14, 34-35, 58 [English translation of *Recht als autopoietisches System* (Frankfurt am Main: Suhrkamp, 1989)].

[1019] Niklas Luhmann, *Law as a Social System* (Klaus A. Ziegert tr., Oxford: Oxford University Press 2004) 142-3, 148 [English translation of *Das Recht der Gesellschaft* (Frankfurt am Main: Suhrkamp, 1993)].

[1020] Arnold and Gunderson, "Adaptive Law" (2013), 10428.

> "[t]he failure of legal institutions to value and facilitate the resilience of ecosystems, such as watersheds, wetlands, forests, deserts, and urban ecosystems, threatens the health, sustainability, and resilience of social systems that depend on ecosystems."

This means that, if legal institutions do not develop the capacity to adapt, social-ecological systems will not be able of achieve resilience justice. Actually, the relationships between ecosystems and social systems have multiscalar, multifunctional, complex, and dynamic character. And it is the threats to or transformations in one system are very likely to affect others.[1021]

Therefore, following the arguments of Arnold and Gunderson, legal institutions

> "are prone to give primary or sole value to the resilience of political and economic institutions, such as production of and transactions in consumer goods, private property rights, the diffusion of governmental power horizontally and vertically through separation of powers and federalism, and the facilitation of financial capital and investment."[1022]

An interesting perspective is that of David Driesen, who has, for example, critiqued the bias in environmental law to protect presumed static economic efficiencies and to ignore dynamic relationships between economics and the

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[1021] See Fikret Berkes and Carl Folke (eds.), *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience* (Cambridge: Cambridge University Press, 1998); Gunderson and Holling (eds), *Panarchy* (2002); Elinor Ostrom et al, "Going Beyond Panaceas," *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 104, Issue 39 (2007), 15176.

[1022] Arnold and Gunderson, "Adaptive Law" (2013), 10428; John G. Sprankling, "The Antiwilderness Bias in American Property Law," *University of Chicago Law Review*, Vol. 63 (1996), 519; Steven J. Eagle, "Private Property, Development, and Freedom: On Taking Our Own Advice," *SMU Law Review*, Vol. 59, Issue 1 (2006), 345.

environment.[1023] And in certain moments, legal systems seem to operate as if their primary function is to promote the sole resilience of the legal system itself.[1024]

Some definitions of resilience can be very often maladaptive and then undermine the health, functioning, and resilience of ecosystems and other social institutions, such as local communities, diverse cultures, families or religions. And when it happens, it can affect the whole of society.

Simultaneously, some alternative conceptions of law, especially regarding environmental law, can reduce the resilience of ecosystems and of natural functions and processes. If there is no adequate attention to the vitality and adaptability of the social systems and institutions, that may be at odds with the natural environment. Examples of that could be the cases in which some environmentalists criticise features of the US political and economic systems that are central to American culture and political structure, such as liberty, private property rights, localism in governance, quasi-free markets, or consumerism.[1025] But systems live with each other and, sometimes, one or more systems requests efforts from others, in order to enhance resilience.

From Arnold and Gunderson's perspective, those critiques from environmentalists may:

> "call for substantial, even radical, transformations of (…) law and society in order to promote ecological health and resilience, biodiversity, and environmental protection."[1026]

[1023] See generally David M. Driesen, *The Economic Dynamics of Environmental Law* (Cambridge, MA: MIT Press, 2003).

[1024] As an example, see Arnold, "Fourth-Generation Environmental Law" (2011), 771.

[1025] See Richard Delgado, "Our Better Natures: A Revisionist View of Joseph Sax's Public Trust Theory of Environmental Protection, and Some Dark Thoughts on the Possibility of Law Reform," *Vanderbilt Law Review*, Vol. 44 (1991), 1209; Eric T. Freyfogle, *Why Conservation Is Failing and How It Can Regain Ground* (New Haven: Yale University Press, 2006).

[1026] Arnold and Gunderson, "Adaptive Law" (2013), 10429.

And changes in the legal system that give primacy to ecosystems or biodiversity, particularly if they require substantial transformations to social systems and institutions, may produce a variety of unintended consequences, including political backlash, non-implementation or under-implementation of the reforms, political and social conflict, and fiscal or economic hardships.[1027]

Only adaptive law, together with adaptive governance, can play a catalyst role in the middle of all the different systems involved. Because the disturbances to social systems and institutions often adversely affect ecosystems and biological communities.[1028]

Moreover, sometimes, even if well intentioned, ecocentric legal reforms may fail to address the most significant pathologies of the interconnections among nature, society, and law.

Adaptive legal systems aim for structures, methods, and processes that can manage for the resilience and adaptive capacity of both nature and society. It includes a range of ecosystems and social systems and institutions.[1029] And only looking at all these systems from an integrated perspective is possible to achieve resilience for all and each of the systems involved.

In other words, as Wenta et al concluded:

> "Legal arrangements must (i) prepare for, and respond to, change; (ii) address distributive effects of climate change and adaptation; (iii) promote participation in adaptation processes; and (iv) cross sectors and scales (…). Existing legal frameworks are not well suited to the implementation of

[1027] As an example, see, Holly Doremus, and Dan Tarlock, *Water War in the Klamath Basin: Macho Law, Combat Biology, and Dirty Politics* (Washington, DC: Island Press, 2008).

[1028] Kuheli Dutt, "Governance, Institutions, and the Environment-Income Relationship: A Cross-Country Study," *Environmental Development and Sustainability*, Vol. 11, Issue 4 (2009), 705; Liam Downey et al, "Natural Resource Extraction, Armed Violence, and Environmental Degradation," *Organization & Environment*, Vol. 23 (2010), 417.

[1029] Arnold and Gunderson, "Adaptive Law" (2013), 10429.

> innovative adaptation policies based on resilience thinking, and fail to adequately address the disproportionate allocation of climate risks borne by the most vulnerable members of society, or vulnerable ecosystems. Laws and reforms that address these shortcomings must be developed and implemented without delay, so that the law can best fulfil its crucial role in facilitating resilient and just adaptation to climatic change."[1030]

These are, actually, the main reasons why adaptive law urges to be implemented and, consequently, enforced.

3.1. Adapting rights

If it is possible to accept mechanisms of adaptive law, which intend to strengthen the ability of law to become resilient and less exposed to vulnerabilities, it could be questioned if rights are also capable of being adaptive.

From this perspective, Bronen introduced the possibility of creating adaptive frameworks based on a doctrine of human rights.[1031]

Based on the arguments that extreme weather events are evidence that climate change is profoundly impacting the habitability of communities around the world, the author decided to analyse the particular reality of Alaska. In this state of the US, climate-induced ecological changes caused by a combination of gradual ecological processes and extreme weather events are continuously damaging community infrastructure, threatening the lives and well-being and altering the habitability of indigenous communities. Admitting that very often

[1030] Joseph Wenta, Jan McDonald, and Jeffrey S. McGee, "Enhancing Resilience and Justice in Climate Adaptation Laws," *Transnational Environmental Law*, Vol. 8, Issue 1 (March 2019), 89-118.
[1031] Robin Bronen, "Climate-Induced Community Relocations: Creating an Adaptive Governance Framework Based in Human Rights Doctrine," *N.Y.U. Review of Law & Social Change*, Vol. 35, Issue 2 (2011), 357-407.

community relocation is the only permanent solution for these problems, post-disaster recovery and hazard mitigation laws, designed to respond to temporary displacement, are still unable to respond to the need for *climigration*.

It is, therefore, urgent that law- and decision-makers lead the effort to respond to climate-induced community relocations and implement legislation to provide governance tools and resources so that communities forced to relocate due to rapid and radical climate change can be resilient. According to Bronen, a model adaptation strategy should be established to facilitate an effective transition from protection in place to community relocation that all governments faced with *climigration* could implement.[1032]

This is only one example of how adaptation and rights may be put together by decision- and lawmakers in order to improve the lives of those who need to be protected, facing the rapid changes in an increasing uncertain world. Using the words of Gerber, legal scholars need to make use of new lenses so as those who make decisions about human rights can more effectively improve the protection of those who suffer from deprivation of those rights.[1033] In the same direction, Ensor et al suggest that drawing on human rights principles and lessons from rights-based practice, it is possible develop novel analytical tools for use with communities that consider adaptive capacity through examination of equality, transparency, accountability and empowerment. The authors' idea is that the rights framing exposes processes of marginalisation and exclusion that lead to differentiation in adaptive capacity and, simultaneously, helps identify concrete

[1032] Bronen, "Climate-Induced Community Relocations" (2011), 407.

[1033] David Joseph Gerber, "A Global Adaptive System for Supporting Human Rights?," in Nicolás Etcheverry Estrázulas, and Diego P. Fernández Arroyo (eds), *Enforcement and Effectiveness of the Law – La mise en oeuvre et l'effectivité du droit*, Ius Comparatum – Global Studies in Comparative Law, vol 30. (Springer, 2018), 45-56.

actions that can be taken as part of a rights-based approach to development support for adaptive capacity.[1034]

Moreover, within the reality of human rights, and more specifically under the analysis of the European Court of Human Rights (ECtHR), West and Schultz have argued that the environmental case law of the Court (or even other international courts) may be an important ground of learning for governance of social-ecological systems.[1035] It situates knowledge and experience of environmental change in the context of discussions about the relative rights, duties, and responsibilities of social actors, while facilitating the mutually adaptive evolution of truth and justice across scales. This happens because managing for social-ecological resilience requires ongoing learning. The increasing of nonlinear dynamics, surprise, and uncertainty requires policies and management actions to be treated as experiments and, therefore, subject to continuous monitorisation and assessment. Legal systems cannot be seen as impediments to resilience. Flexibility, emphasis on checks and balances, protection of individual rights, but also public interests, and a search for justice

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[1034] J. E. Ensor et al, "A rights-based perspective on adaptive capacity," *Global Environmental Change*, Vol. 31 (March 2015), 38-49.

[1035] See the examples of *Powell & Raynor v. United Kingdom* (application no. 9310/81) ECtHR Judgment, 21 February 1990 <http://hudoc.echr.coe.int/eng?i=001-57622> (accessed on 2020.01.06); *Guerra and Others v. Italy* (116/1996/735/932) ECtHR Judgment, 19 February 1998 <http://hudoc.echr.coe.int/eng?i=001-58135> (accessed on 2020.01.06); *Kyrtatos v. Greece* (application no. 41666/98) ECtHR Judgment, 22 May 2003 <http://hudoc.echr.coe.int/eng?i=001-61099> (accessed on 2020.01.06); *Hatton and Others v. the United Kingdom* (application no. 36022/97) ECtHR Judgment, 8 July 2003 <http://hudoc.echr.coe.int/eng?i=001-61188> (accessed on 2020.01.06); *Taskin and Others v. Turkey*; *Oneryildiz v. Turkey* (application no. 48939/99) ECtHR Judgment, 30 November 2004 <http://hudoc.echr.coe.int/eng?i=001-67614> (accessed on 2020.01.06); *Fadeyeva v. Russia*; *Fagerskiold v. Sweden* (application no. 37664/04) ECtHR admissibility hearing, 26 February 2008 <http://hudoc.echr.coe.int/eng?i=001-85411> (accessed on 2020.01.06); *Tatar v. Romania* (application no. 67021/01) ECtHR Judgment, 27 January 2009 <http://hudoc.echr.coe.int/eng?i=001-90909> (accessed on 2020.01.06); *Greenpeace E.V. and Others v. Germany* (application no. 18215/06) ECtHR admissibility hearing, 12 May 2009 <http://hudoc.echr.coe.int/eng?i=001-92809> (accessed on 2020.01.06). Under the jurisdiction of the International Court of Justice (ICJ), see also *Gabčikovo-Nagymaros Project (Hungary/Slovakia)*.

over "contingent truth" are part of this process. Therefore, elements that provide for pursuit and protection of evolving ideas of justice and equity, such as law, are critical for guiding human understanding of and interaction with the environment.[1036]

3.2. Adapting statutes

As Cosens et al correctly assert, the adaptive capacity of social-ecological systems naturally requires the resources (generally appropriated through a legislative act) and legal authority to more rapidly and efficiently respond to change. And this is is reflected in the statutes, regulations, and practices of agencies.[1037]

On the other hand, Frohlich et al argue that law is often seen as a barrier for moving adaptive solutions beyond the usual theoretical field. Nonetheless, more flexible legal frameworks can allow for adaptive management without undermining the role of law in providing stability to social interactions. A balance is therefore needed. And achieving this balance necessarily requires the reform of existing laws, regulations, and other legal instruments, which need to expressly start to provide the adaptive characteristics discussed above.

Reforms for adaptation of legal systems, and more specifically legal statutes, can facilitate the emergence of a more spirit of adaptive public governance, with the

[1036] For all, see Simon P. West and Lisen Schultz, "Learning for resilience in the European Court of Human Rights: adjudication as an adaptive governance practice," *Ecology and Society*, Vol. 20, Issue 1 (2015), 31 <https://www.ecologyandsociety.org/vol20/iss1/art31/> (accessed on 2020.01.06).

[1037] Cosens et al, "The role of law in adaptive governance" (2017), 1-12. See also Margot Hill Clarvis et al, "Water, resilience and the law: from general concepts and governance design principles to actionable mechanisms," *Environmental Science and Policy*, Vol. 43 (2014), 98-110.

potential to support not only adaptive management implementation but also to make law itself more flexible and adaptive.[1038]

3.3. Adapting court decisions

The tools of adaptive management have become a relevant tonic in social-ecological and natural resources policy, governance, and start now to also be received by law. Constantly suggesting by itself the core idea of "learning while doing," the practice of adaptive management has been revolutionising the social-ecological environmental policy, surfacing in everything the most simple and local permits to large and general national proclamations.[1039]

An increasing number of legal and policy scholars have been asking the question if appending "adaptive" in front of "management" somehow makes policies better. Their evaluations appear to have rested on theory, programme-specific surveys, and isolated case studies. And when these questions move to legal areas (and especially in court decisions), answers may even be more difficult to find.

Ruhl and Fischman have been examining the theory, policy, and practice of adaptive management, focusing on the experience of US federal resource management agencies. Looking at the results in practical reality, the authors conclude that what is usually done is what they call "a/m-lite"[1040] or a watered

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[1038] For all, see Miguel F. Frohlich et al, "The relationship between adaptive management of social-ecological systems and law: a systematic review," *Ecology and Society*, Vol. 23, Issue 2 (2018), 23 <https://www.ecologyandsociety.org/vol23/iss2/art23/> (accessed on 2020.01.06).

[1039] J. B. Ruhl, and Robert Fischman, "Adaptive Management in the Courts," *Minnesota Law Review*, Vol. 95, No. 2 (2010), 424-484; FSU College of Law, Public Law Research Paper No. 411; Indiana Legal Studies Research Paper No. 154 <https://ssrn.com/abstract=1542632> (accessed on 2020.01.06).

[1040] "a/m-lite" is a stripped-down version of adaptive management that almost always neglects to develop testable hypotheses as the basis for management actions and often fails due to management, implementation, and planning problems.

down version of the theory that resembles ad hoc contingency planning more than it does planned "learning while doing." The gap between theory and practice leads therefore to large disparities between how agencies justify decisions and how adaptive management arrives to courts. They also analyse how the mentioned disparities usually play out in courts, considering claims that agency practice of adaptive management does not live up to its theoretical promise or to the specific demands of substantive and procedural environmental law. The authors' ultimate message is that "a m-lite" can be an effective decision method and may be one that survives judicial scrutiny. However, agencies must be more disciplined about its design and implementation. Therefore, they must resist the temptation to employ adaptive management to dodge burdensome procedural requirements, substantive management criteria, and contentious stakeholder participation. If faithfully followed and enforced, this model, despite its flaws, could serve as an important component of natural resources policy to confront social and environmental problems of the future, such as climate change or even resilience injustice.[1041]

In another analysis from the same authors, it was verified that in all US federal court opinions published through 1 January 2015 to identify agency adaptive management practices courts found most deficient. The referred weaknesses were lack of clear objectives and processes, monitoring thresholds, and defined actions triggered by thresholds.[1042]

[1041] Ruhl and Fischman, "Adaptive Management in the Courts" (2010), 424-484.

[1042] Robert Fischman and J. B. Ruhl, "Judging Adaptive Management Practices of U.S. Agencies," *Conservation Biology* Vol. 30 (2016), 268-275. In this sense see also, Susanne C. Moser and Julia A. Ekstrom, "A framework to diagnose barriers to climate change adaptation," *Proceedings of the National Academy of Sciences,* Vol. 107, Issue 51 (2010), 22026-22031 <https://www.pnas.org/content/107/51/22026> (accessed on 2020.01.06); Martin A. Nie and Courtney A. Schultz, "Decision-making triggers in adaptive management," *Conservation Biology*, Vol. 26, No. 6 (December 2012),1137-1144; David B. Lindenmayer et al, "Counting the books while the library burns: why conservation monitoring programs need a plan for action," *Frontiers in*

US courts have, therefore, developed a sophisticated understanding of adaptive management and often offer instructions, rather than merely critical opinions. The role of the judiciary is usually limited by agency discretion under general administrative law. Courts have overturned some agency "a m-lite" practices and insisted on more rigorous analyses to ensure that the promised benefits of structured learning and fine-tuned management have a reasonable likelihood of occurring. Regarding these issues, a divergence in public law remains between the flexibility demanded by adaptive management and the actual legal objectives of transparency, public participation, and finality.[1043]

Craig et al insist that for public agencies to implement adaptive management more successfully, administrative law must adapt to adaptive management. Following this perspective, through a specialised "adaptive management track" of administrative procedures, the core values of administrative law – especially public participation, judicial review, and finality – would need to be implemented in ways that open space for more effective adaptive management. This way, the authors suggest a draft model adaptive management procedure legislation, which would create such a track for the specific types of agency decision making that could benefit from adaptive management and would then be better adjudicated by courts.[1044]

Ecology and the Environment, Vol. 11, Issue 11 (2013),549-555 <https://openresearch-repository.anu.edu.au/bitstream/1885/64992/2/01_Lindenmayer_Counting_the_books_while_the_2013.pdf> (accessed on 2020.01.06); Vicky J. Meretsky and Robert L. Fischman, "Learning from conservation planning for the U.S. national wildlife refuges," *Conservation Biology*, Vol. 28, Issue 5 (2014), 1415-1427.

[1043] Fischman and Ruhl, "Judging Adaptive Management Practices of U.S. Agencies" (2016), 268-275.

[1044] Robin K. Craig et al, "A proposal for amending administrative law to facilitate adaptive management," *Environmental Research Letters*, Vol. 12, No. 7 (2017), 074018 <https://iopscience.iop.org/article/10.1088/1748-9326/aa7037/meta> (accessed on 2020.01.06).

Even though, courts can play an extremely relevant role in the pathway to adaptation and fostering social-ecological resilience. Actually, as Dagostino asserts, it is today possible to understand the role that courts, and especially the administrative judge, might have in amplifying, hindering or distorting the mechanisms of resilience within risk management.

Therefore, the more the judicial control over risk – in particular over those risks stemming from technological unknowns – is able to strike the difficult balance between the principle of legality and the effectiveness of protection, the more judicial decisions will result in effective and positive compliance on the part of the public administration when re-examining such risks.[1045]

4. The adaptive path from environmental rights to resilience justice

As it was previously demonstrated, constitutional environmental rights have proved to be insufficient to play the role of primary (or only) legal instruments of fostering social-ecological resilience justice. Actually, they could be understood as starting points, triggers, or conditions for that implementation. However, as previously shown in this dissertation, very often they fail to act as effective mechanisms of tackling vulnerabilities and uncertainty. They need to be concretised in practice by other elements.

Law – especially public or administrative – must therefore be used to build resilience.[1046] It is, therefore, possible to analyse the already proclaimed environmental rights, at different levels as being able to be subject to the

[1045] Raffaella Dagostino, "The spillover rule of the administrative court to increase resilience," *Rivista Italiana di Diritto Pubblico Comunitario*, A. 29, No. 1 (2019), 51-69.

[1046] Jan McDonald, "Risk, resilience and environmental regulation: using law to build resilience to climate change impacts," in Bridget M. Hutter (ed.), *Risk, Resilience, Inequality and Environmental Law* (Cheltenham: Edward Elgar, 2017), 29-48.

application of adaptive law. In effect, rights are an integrating part of the legal system and must be treated as part of that system.

As demonstrated above, adaptive management is a structured decision-making method. It is a multistep, iterative process for adjusting management measures to changing circumstances or new information about the effectiveness of prior measures or the system being managed. And administrative law needs to adapt to it, balancing the needs of adaptive management with the values of administrative law.[1047]

As Pieraccini asserts, dynamism and learning are essential for a resilience approach, demanding governance, management, but also law to be adaptive with solid provisions for monitoring, reviewing and assessing and re-assessing already existing measures. Flexible and participatory procedures are as well essential to account for the plurality and changes in of social-ecological systems, as a prerequisite for distributive justice. In fact, deliberation can include discussion on a just distribution of law's benefits and costs to social and ecological systems.[1048]

However, following the words of Davoudi et al:

> "Resilience for some people or places may lead to the loss of resilience for others. Therefore, in the social context we cannot consider resilience without paying attention to issues of justice and fairness in terms of both the procedures for decision-making and the distribution of burdens and benefits"[1049]

Consequently, if constitutional environmental rights prove not to be as strong, effective and fair as desired in their self-implementation, the remaining legal

[1047] Craig and Ruhl, "Designing Administrative Law for Adaptive Management" (2014), 1-87.
[1048] Margherita Pieraccini, "Towards Just Resilience" (2019), 213-234.
[1049] Simin Davoudi, "Resilience: A Bridging Concept or a Dead End?," *Planning Theory & Practice*, Vol. 13, No. 2 (June 2012), 299-333, 306.

system needs to develop them, especially through infra-constitutional legislation (and also governance and policy). In these cases, whilst integrating concerns for social justice, critiques of structural inequalities, and commitments to improve the resilience of marginalised and oppressed communities, social-ecological resilience justice (or just resilience) may also help legal systems, namely with regard to implementing and enhancing equal and fair access to environmental protection and wellbeing, through increasing procedural justice and representation for this pathway of adaptation.[1050]

5. Conclusive synthesis

It is now unquestionable that environmental rights may play a relevant role for enhancing resilience justice. Nevertheless, they demonstrate to be insufficient. It is possible to conclude that adaptive law is an even stronger way of achieving those objectives. Because static governance or legal systems are incompatible with social-ecological fast-moving complex systems, adaptive approaches are needed, in management, planning, governance and even law. The mere proclamation of one right only demonstrates the intention of the state, local authorities, the people, or the international community to protect a certain right as previously explained. Implementing it in an effective way is different.

This is the reason why adaptive law is a highly relevant tool. It can connect the already proclaimed environmental rights to the implementation or enhancement of resilience justice. Through the involvement of different stakeholders, the empowerment of citizens and communities, the implementation of iterative processes where all can participate, it is more likely to include in the decision- and law-making process all the main agents of social-ecological systems. And

[1050] Boamah and Arnold, "Assemblages of Inequalities and Resilience Ideologies in Urban Planning" (in press).

community action, which will be developed in the following chapter, is an important part of this reality.

Chapter VI – Community action for resilience justice

1. Law, governance and social action: a bottom-up approach

After analysing legal elements and instruments, such as rights, legal frameworks and adaptive law, there is still a piece that lacks in the middle of all these systems. It is connected to the empowerment of those who live in and among the social-ecological systems: the communities.

Therefore, it is possible to verify that "legal doctrines and environmental litigation are often necessary but insufficient means of achieving environmental conservation."[1051]

When environmental rights do not appear to have an effective strength and even the application of a more adaptive law could not be sufficient, there must be other solutions. Until this moment, the vulnerabilities of social-ecological systems in cities were analysed from a perspective that appears to look at top-down solutions. However, resilience justice approaches are intrinsically connected to (and dependent on) the empowerment, engagement and participation of local populations.[1052]

Even when discussing the problem of regulation in climate change, authors such as Kaime include social-cultural elements, within the following: i) spatial and temporal limitations; ii) regulatory transitions in favour of climate change mitigation and adaptation; iii) culture and the omnipresence of change; iv)

[1051] Arnold, "Working out an Environmental Ethic" (2004), 33. See also Craig Anthony (Tony) Arnold, "Litigation as Dispute Non-Resolution: Lessons From Case Studies in Water Rights Disputes," in Craig Anthony (Tony) Arnold and Leigh A. Jewell (eds.), *Beyond Litigation: Case Studies in Water Rights Disputes* (Washington, DC: Environmental Law Institute, 2002), 2; Arnold and Jewell, "Litigation's Bounded Effectiveness and the Real Public Trust Doctrine: The Aftermath of the Mono Lake Case" (2008), 4-21.

[1052] Challies et al, "Participatory and collaborative governance for sustainable flood risk management: An emerging research agenda," *Environmental Science & Policy*, Vol. 55, Part 2 (January 2016), 275-280.

cultural legitimacy and international regulation; v) cultural legitimacy and regulatory transitions in favour of climate change mitigation.[1053]

Nevertheless, the success of these ideas depends on social trust and collaboration within a certain community.

One example of these efforts was the move to encourage partnership funding of Flood Risk Management (FRM) in the UK, which has resulted in current FRM measures providing both public and private benefits. The scales of service delivery associated with public and private goods are likely to influence the form and extent of public participation in FRM. Geaves and Penning-Rowsell assessed the range of goods provided by FRM, whether these services wer considered to be public in nature by authorities and citizens, and the impact this has had upon the level and form of public engagement in FRM. The authors decided to distinguish the definitions of public goods into "pure" public goods, which demonstrate characteristics of non-rivalry and non-excludability, and public priority goods which would be services deemed as essential to public wellbeing regardless of characteristics. Their conclusions were that British FRM delivered a range of public goods beyond that of reduced water flows, and when FRM was considered a "pure" public good, the possibility of public participation did not increase public awareness of flood risk or investment in private protection measures. Nevertheless, when the benefits were solely considered public priority goods, public awareness of flood risk increased, and disputes arose regarding service provision and maintenance.[1054]

[1053] Thoko Kaime, "Cultural legitimacy and regulatory transitions for climate change: A discursive framework," in Thoko Kaime (ed.), *International Climate Change Law and Policy: Cultural legitimacy in adaptation and mitigation* (Abingdon: Routledge, 2014), 29-40.

[1054] Linda H. Geaves, and Edmund C. Penning-Rowsell, "Flood Risk Management as a public or a private good, and the implications for stakeholder engagement," *Environmental Science & Policy*, Vol. 55, Part 2 (January 2016), 281-291.

This was only one example of how participation and awareness can differ depending on the object that is put to consideration in public consultation. However, it also demonstrates that stakeholder and community empowerment, engagement and participation help local populations and public authorities to find better solutions in order to face vulnerabilities and uncertainties.

Actually, still dealing with FRM, as Thaler and Levin-Keitel argue, stakeholder and community engagement is often declared as a better way of management, a more successful way to reach consensus in policy discussions. Nevertheless, its implementation is, in some cases, far away from being as positive, when it often ends in diverse difficulties and conflicts between political leaders and stakeholder and community groups. Aiming to highlight participatory governance in FRM, the authors intended to provide potential contributions for more participatory and collaborative governance approach. In the end, they concluded that the local involvement in the discussion and decision-process strongly depends on the local capacity (or a capacity to act), such as resources (knowledge, financial, time), interest, social and cultural capital.[1055]

2. Trust and collaboration for social-ecological resilience

According to Kasperson, Golding, and Tuler, social trust could be defined as "a person's expectation that other persons and institutions in a social relationship can be relied upon to act in ways that are competent, predictable, and caring."[1056] The authors add one more dimension, which is commitment, and then describe the following four factors of trust:

[1055] Thomas Thaler, and Meike Levin-Keitel, "Multi-level stakeholder engagement in flood risk management – A question of roles and power: Lessons from England," *Environmental Science & Policy*, Vol. 55, Part 2 (January 2016), 292-301.

[1056] For all, Roger E. Kasperson et al, "Social distrust as a factor in siting hazardous facilities and communicating risks," *Journal of Social Issues*, Vol. 48, Issue 4 (1992), 161-187.

a) *Competence* – trust is gained only when the individual or institution in a social relationship is judged to be reasonably competent in its actions over time;
b) *Commitment* – trust relies on perceptions of uncompromised commitment to a common mission or goal (such as protection of the public health), and fulfilment of fiduciary obligations or other social norms;
c) *Caring* – trust relies on a perception that an individual (or institution) will act in a way that shows concern for and beneficence to trusting individuals;
d) *Predictability* – trust rests on the fulfilment of expectations and faith predictability does not necessarily require consistency of behaviour. Complete consistency of behaviour would require unchanging actions or beliefs, even in the face of contradictory information, and also more consistency in values and related behaviour than most individuals, groups, or institutions possess.[1057]

The framework here identified demonstrates to be useful for examining how trust is eroded, lost, and has the potential to be rebuilt. By extension, this approach could also help in developing resilient communities.[1058]

It is understood by authors, such as Paton et al., that human beings entrust themselves to group problem solving if they believe to possess the ability to devise a solution and the power to implement it.[1059]

However, trust is best conceived as "generalized trust (…) in other people, [which] is related to informal participation" in social networks, rather than to

[1057] Kasperson et al, "Social distrust as a factor in siting hazardous facilities and communicating risks" (1992), 170.
[1058] Connie P. Ozawa, 'Planning Resilient Communities: Insights from Experiences with Risky Technologies', in Bruce Evan Goldstein (ed.), *Collaborative Resilience…*, 23-24
[1059] Douglas Paton et al, "Risk perception and volcanic hazard mitigation: Individual and social perspectives," *Journal of Volcanology and Geothermal Research*, Vol. 172 (2008), 179-188.

those more formal network structures, which are hallmarks of institutional trust.[1060]

Collective settings allow for relationship building that fosters the trust necessary to overcome the possible obstacles.[1061] Therefore, where there is a community, there is space and margin for relationship, collective and collaborative action and governance, especially when dealing with uncertainty.[1062]

This means that collaborative planning for social-ecological resilience can combine the building blocks of trust and diversity to foster improved social resilience within organizations and communities.[1063] It also taps the experience of diverse members familiar with the causes, conditions, and consequences of a serious unexpected problem, as well as puts that experience to practical use by helping others learn from it.[1064]

3. Community action frameworks for social-ecological resilience

For the reasons expressed in the previous paragraphs it is possible to understand the importance of collaboration between all stakeholders and communities. Here,

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[1060] J. Ahnquist, M. Lindström, and S. P. Wamala, "Institutional trust and alcohol consumption in Sweden: The Swedish National Public Health Survey, 2006," *BMC Public Health*, Vol. 8 (2008), 283.

[1061] Moira L. Zellner et al, "Leaping Forward: Building Resilience by Communicating Vulnerability," in Bruce Evan Goldstein (ed.), *Collaborative Resilience: Moving Through Crisis to Opportunity* (Cambridge, MA: MIT Press, 2012), 42-43.

[1062] Hutter, "Collaborative governance and rare floods in urban regions" (2016), 302-308.

[1063] See Patsy Healey, "Collaborative planning in a stakeholder society," *Town Planning Review*, Vol. 69, Issue 1 (1998), 1-21; Patsy Healey, "Building institutional capacity through collaborative approaches to planning," *Environment and Planning. B, Planning & Design*, Vol. 30 (1998), 1531-1546; and Judith E. Innes, and David E. Booher, *The impact of collaborative planning on governance capacity*, Working Paper, No. 2003,03 (Berkeley, CA: UC Berkeley, Institute of Urban and Regional Development, 2003).

[1064] Zellner et al, "Leaping Forward: Building Resilience by Communicating Vulnerability" (2012), 44-45.

not only law, but also politics and public policy play a relevant role, because the broader quantity of agents who live in the territory are be included, the more decision- or law-making will reflect the needs and interests of the community. This is why public engagement and community engagement are important for analysing and improving the relation between social and ecological systems within the territory of a city or even a sole neighbourhood.

With regard to this reality, Pickett et all contrast between *ecology in* cities and *ecology of* cities. Ecology in the city focuses on terrestrial and aquatic patches within cities, suburbs, and exurbs as analogues of non-urban habitats. On the other hand, ecology of the city differs from ecology in by treating entire urban mosaics as social-ecological systems. For the authors, the paradigm change between ecology in and ecology of represents increased complexity, moving from focus on biotic communities to holistic social-ecological systems.[1065]

A third paradigm here would be *ecology for* the city, which has emerged due to concern for urban sustainability. Ecology for includes the knowledge generated by both ecology in and ecology of. This perspective includes researchers as a part of the system, and acknowledges that they may help envisioning and advancing social goals of urban sustainability. These three paradigms are shown to contrast in five important ways: disciplinary focus, the relevant theory of spatial heterogeneity, the technology for representing spatial structure, the resulting classification of urban mosaics, and the nature of application to sustainability. This approach of ecology for the city intends to encourage ecologists to engage

[1065] Steward T. A. Pickett et al, "Evolution and future of urban ecological science: ecology in, of, and for the city," *Ecosystem Health and Sustainability*, Vol. 2, Issue 7 (2016), e01229 <https://www.tandfonline.com/doi/pdf/10.1002/ehs2.1229?needAccess=true> (accessed on 2020.01.05).

with other specialists and urban dwellers, in order to shape a more sustainable urban future.[1066]

Nevertheless, an ecology for cities is a call for action-based ecological research and knowledge that is part of a new urban design process working at all scales of urban decision-making, from individual households to neighbourhoods to regions. This inclusive and creative process may produce new and innovative solutions that allow tomorrow's cities to be better prepared for a climate-uncertain future.[1067]

The trend of urban political ecology (UPE), which emerged in the late 1990s, has had the major impacts of introducing critical political ecology to urban settings, and providing a framework for retheorising the city as a product of metabolic processes of social-ecological transformation. Early UPE intended to mobilise Lefebvrian theoretical frameworks by exploring urbanisation as a global process. However, instead of following this path, this promise of working across traditional disciplinary divisions and provide insights into a new era of planetary urbanisation, has remained unaccomplished.[1068]

According to Goldsmith, unless cities quickly embrace new planning paradigms and engage citizens and practitioners in a new ecoliteracy, communities and territories may not be able to reverse the devolution we observe today.[1069]

[1066] Pickett et al, "Evolution and future of urban ecological science: ecology in, of, and for the city" (2016), e01229.

[1067] Daniel L. Childers et al, "An Ecology for Cities: A Transformational Nexus of Design and Ecology to Advance Climate Change Resilience and Urban Sustainability," *Sustainability*, Vo. 7, Issue 4 (2015), 3774-3791 <https://www.mdpi.com/2071-1050/7/4/3774/htm> (accessed on 2020.01.05).

[1068] Hillary Angelo, and David Wachsmuth, "Urbanizing Urban Political Ecology: A Critique of Methodological Cityism," *International Journal of Urban and Legal Research*, Vol. 39, Issue 1 (2015), 16-27.

[1069] Stephen A. Goldsmith, "Urban Ecology as the New Planning Paradigm: Another Legacy of Jane Jacobs," in Dirk Schubert (ed.), *Contemporary perspectives on Jane Jacobs: Reassessing the Impacts of an Urban Visionary* (Farnham: Ashgate, 2014), 225-231.

An interesting example is introduced by Sarzynski, who explored the policy and planning efforts of the city of Baltimore, Maryland, with respect to climate change adaptation using the institutional analysis and development framework. The city's innovative combined disaster preparedness and climate change adaptation planning efforts have been recognised for their high quality from the federal government and non-profit organizations. According to the author, city staff chose to build civic capacity on climate change resilience early in its implementation efforts, reaching more than one thousand residents. However, civic dialogue around climate adaptation or private adaptive action has not emerged. Adaptation efforts demonstrated to be rooted within the governmental realm and subject to resource constraints of its primary institutions, leaders, and staff. The case of Baltimore revealed resistance of staff when conducting climate adaptation planning in an atmosphere of fiscal constraint, and difficulties in fostering community engagement and a community-wide sense of responsibility for climate adaptation action.[1070]

On the other hand, Caldeira and Holston intended to focus on participatory urban planning as a model of urban reform and democratic invention in Brazil. They looked at the formulation and implementation of the 1988 Citizen Constitution and the City Statute, from 2001, which required that 1600 cities (approximately 30%) of Brazilian municipalities either create Master Plans or reformulate existing ones according to its principles and on the basis of popular participation.[1071]

The authors argue that a fundamental goal of the movement for democratic urban reform was to institutionalise popular participation as its mechanism for

[1070] Andrea Sarzynski, "Multi-level Governance, Civic Capacity, and Overcoming the Climate Change 'Adaptation Deficit' in Baltimore, Maryland," in Sara Hughes, Eric K. Chu, and Susan G. Mason (eds.), *Climate Change in Cities: Innovations in Multi-Level Governance*, The Urban Book Series (Gewerbestrasse: Springer, 2018), 97-120.

[1071] Caldeira and Holston, "Participatory urban planning in Brazil" (2015), 2001-2017.

implementing democratic principles of municipal governance and greater social justice.[1072] However, this institutionalisation is often ineffective. Although working-class city-building generated a new paradigm of participatory urban planning, this model will not in itself ensure that low-income communities interests define the future of cities. Poorer populations and upper classes may collide in the institutionalised spaces of participatory citizenship to produce and manage city life to their own terms. Therefore, low-income or more marginalised communities need to improve methods of "insurgent" planning as a core component of their participation. It is essential not only for communities to organise themselves, but also for local governments to support them in this pacific and democratic citizen insurgence, insisting both in the streets and in the courts on the primacy of constitutional principles of social and ecological justice in the development of the city.[1073]

4. Conclusive synthesis

This chapter intended to demonstrate that law, governance, and social action can and should walk hand-in-hand when what is at stake is the protection of environment and the implementation or enhancement of social-ecological resilience.

For communities to thrive, it is therefore necessary that trust and collaboration exists and, if not, it must be promoted by public authorities or event by decision- and law-making. Involving those who are governed, through public participation and consultation, such in the famous examples (but not only) of

[1072] On this issue, and especially regarding diffuse interests, as the refraction in each individual of the unitary interests of the community, as globally considered, see Gomes Canotilho and Vital Moreira, *Constituição da República Portuguesa Anotada* (2014), 696-699.

[1073] Caldeira and Holston, "Participatory urban planning in Brazil" (2015), 2001-2017.

participatory budgeting,[1074] demonstrates to be a way of promoting peace within communities and find more efficient and collaborative solutions for social and environmental problems, because they are embrace the efforts and contribution of all those who live in that certain territory.

Community or social action is, thus, another complement to the instruments of adaptive law and, by the analysis previously developed, they show to coexist perfectly and support each other characteristics and objectives.

[1074] Nelson Dias (org.), *Hope For Democracy: 25 Years of Participatory Budgeting Worldwide* (São Brás de Alportel: In Loco, 2019) <http://www.in-loco.pt/upload_folder/edicoes/1279dd27-d1b1-40c9-ac77-c75f31f82ba2.pdf> (accessed on 2020.01.06).

Chapter VII – An adaptive framework for resilience justice

1. Connecting environmental rights, resilience justice, adaptive law, and community action

At this point, it is possible to assert that citizens, communities, and the territories where they live in need the connection of a group of different elements which were previously presented and analysed in this research, especially the provision and protection of environmental rights, allied to the implementation or enhancement of resilience justice in the territories at stake (in this case, urban environments). Moreover, these elements can only be reached through the use of tools of adaptive law, which also need to be supported on community action.[1075]

On this ground, and from a more social and policy perspective, Patterson and Smith argue that more just and ecological sound alternatives must be implemented for achieving environmental justice and community resilience, which are the following:

a) Broaden participation in public policymaking;
b) Engage human rights discourses and institutions;
c) Utilise transnational networks and resources;
d) Remove policy barriers to resilience; and
e) Create spaces for developing community cohesion and other values that foster resilience.[1076]

However, for these solutions to be implemented, legal frameworks must be prepared to open a larger space for them. Therefore, this means that it is urgent to find fundamentals or baselines for more adaptive legal frameworks.

This means that environments rights, resilience justice, adaptive legal mechanisms, and community action must all be part of the same framework,

[1075] See, for all, Wilson, *Community Resilience and Environmental Transitions* (2012).
[1076] Patterson and Jackie Smith, "Environmental justice initiatives for community resilience" (2017), 229-230.

which will improve the protection of the environment and social wellbeing within the urban space.

2. Formulating an adaptive legal framework for resilience justice

In 1997, Ruhl argued that "environmental law acts as if its subject matter is reducible, linear, and predictable."[1077] And climate change has already shown that, if it was not before, it hardier is now. Resilience is needed and legal frameworks must be adaptive.

This is the reason why Arnold and Gunderson suggest that adaptive planning and law should follow characteristics and features such as:

a) Flexibility and expectations of difficult-to-predict change in communities and territories (i.e. tolerance for ambiguity and uncertainty);
b) The use of multiple scenarios and hypotheses, data replication and pseudoreplication, data analogues, testable and revisable thresholds, and similar scientific methods for reducing or accounting for uncertainty and instability;
c) Continuous learning, monitoring, and analysing feedback loops that affect the implementation of plans and the application of laws (including maintaining a commitment to these processes);
d) Ongoing and iterative changes to plans and laws (including some plan development and law changes during implementation);
e) Holistic and flexible design, including the embedding of options within plan and laws (e.g. in the forms of menus, branches, or sequels);

[1077] J.B. Ruhl, "Thinking of Environmental Law as a Complex Adaptive System: How to Clean Up the Environment by Making a Mess of Environmental Law," *Houston Law Review*, Vol. 34, No. 4 (1997), 933-1002.

f) Integrated and interdisciplinary or transdisciplinary planning and legislations that addresses a range of interrelated scales, problems, and disciplinary insights;
g) Management or coordination of interdependent conditions;
h) Consideration of social, political, economic, cultural, institutional, and organisational complexities, as well as scientific, natural, and technical complexities when developing plans, implementing laws, and managing actions;
i) Participatory social interaction among multiple participants at various levels of organisational structure and through multi-organisation networks (including scaling up and down and using dynamic decision-making processes);
j) Planning of processes (planning of planning) as well as planning of management activities.[1078]

This interpretation is close to Ebbesson's stand, who identifies the following factors and conditions as particularly relevant for the ability to govern socio-ecological systems, and to cope with surprises and unpredicted and complex changes:

a) *Flexibility* in social systems and institutions to deal with continuous changes;
b) *Openness* of institutions so as to provide for broad participation, not least in local decision-making and administration (and also in law-making);
c) Effectiveness of *multilevel governance*; and

[1078] Craig Anthony (Tony) Arnold and Lance H. Gunderson, "Adaptive Law," in Ahjond S. Garmestani and Craig R. Allen (eds.), *Social-Ecological Resilience and Law* (New York: Columbia University Press, 2014), 317-364; and Arnold, "Adaptive Watershed Planning and Climate Change" (2010), 417-487.

d) Social structures that can promote *learning and adaptability* without limiting the options for future development.[1079]

In the areas of human rights, Brems suggests a "smart" perspective for the integration of human rights, based on specialisation, contextualisation, experimentation (and monitoring), and strategic choice. From the author's point of view, an intensifying conversation between monitoring bodies must exist. Moreover, an intense conversation between all actors involved in the human rights process must exist. And these actors are not only the traditional public authorities and bodies, but also those who are not directly connected to the state. They can be large, medium, or small private entities who must respect the others' rights, but mostly local communities, whose environmental rights must be protected, and resilience justice ensured.[1080]

Brems concludes that "smart human rights integration" does not require a radical departure from existing practices. It is possible through the systematisation of practices of cross-referencing and motivation that are currently uneven. In fact, smart human rights integration can reflect the spreading across the human rights system of a holistic mindset, that views each human rights text or mechanism as part of a greater whole.[1081]

Patterson and Smith suggest the following solutions:

[1079] Jonas Ebbesson, "The rule of law in governance of complex socio-ecological changes," *Global Environmental Change*, Vol. 20 (2010), 414-422. In the same line, see Walker and Salt, *Resilience Thinking* (2006); Carl Folke, "Freshwater for resilience: a shift in thinking," *Philosophical Transactions of the Royal Society of London*, Series B (2003), 2027-2036; Carl Folke, "Resilience: the emergence of a perspective for social-ecological systems analyses," *Global Environmental Change*, Vol. 16 (2006), 253-267.; Carl Folke et al, "Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations," *Ambio*, Vol. 31, No. 5 (August 2002); W. Neil Adger, "Social and ecological resilience: are they related," Progress in Human Geography, Vol. 24, Issue 3 (September 2000), 347-364; W. Neil Adger et al, "Social-ecological resilience to coastal disasters," *Science*, Vol. 309 (August 2005), 1036-1039.

[1080] Brems, "Smart human rights integration" (2018), 165-193.

[1081] Brems, "Smart human rights integration" (2018), 193.

a) Broaden participation in public policymaking;
b) Engage human rights discourses and institutions;
c) Utilise transitional networks and resources;
d) Remove policy barriers to resilience; and
e) Create spaces for developing community cohesion and other values that foster resilience. [1082]

Following the perspectives of Garmestani et al, environmental governance has made substantial progress in addressing environmental change, but emerging environmental and social problems require new innovations in law, policy, and governance. Expansive legal reforms are unlikely to occur. Nevertheless, there is untapped potential in existing laws to address environmental change, both by leveraging adaptive and transformative capacities within the law itself to enhance social-ecological resilience and by using those laws to allow social-ecological systems to adapt and transform.

Governments, other governance agents, and local communities can make substantial advances in addressing environmental change in the short term, even without major legal reforms. The secret is in exploiting their untapped capacities, following the principles, strategies and tools for more adaptive law, policy and governance.[1083]

Examples of approaches and solutions in line with this perspective have also been developed by the European Commission for better regulation under the scope of EU law, such as those based on (i) applying general principles of better regulation; (ii) carrying out impact assessments; (iii) identifying impacts; (iv) preparing proposals, implementation and transposition; (v) monitoring the

[1082] Brems, "Smart human rights integration" (2018), 193.
[1083] Ahjond Garmestani et al, "Untapped capacity for resilience in environmental law," *Proceedings of the National Academy of Sciences*, Vol. 116, Issue 40 (October 2019), 19899-19904.

application of an intervention; (vi) carrying out evaluations and fitness checks; (vii) consult stakeholders; (viii) apply methods, models, costs and benefits.[1084]

2.1. Public participation

Following the international, regional, and national instruments that have been approved in the last years and are already in force[1085], it is clear that environmental law is increasingly being characterised by the element of public participation and/or consultation.[1086]

The increasing role of legal systems in promoting participatory capacity is to provide the requirement for public participation, judicial forums that can recognise and enforce the rights of citizens and communities without general access to power, and where appropriate, opportunities for capacity building and empowering through the legislative allocation of resources and authority to facilitate local response of communities.[1087]

In fact, following Aragão's perspective, who argues for a fundamental right of citizen participation, having accurate information on what citizens and

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[1084] See European Commission's Better regulation General principles <https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox_en> (accessed on 2020.02.10).

[1085] From the the norms of Aahrus Convention to its transposition to the EU and the legislation of Member States, and also to the various legal frameworks within the US and its states, which examples where mentioned in the previous paragraphs.

[1086] Jonas Ebbesson, "Public Participation in Environmental Matters – International Human Rights Developments in Europe and Africa," Faculty of Law, Stockholm University Research Paper No. 58 (2018) <https://ssrn.com/abstract=3164785> (accessed on 2020.01.06).

[1087] Cosens et al, "The role of law in adaptive governance" (2017), 1-12; and Working Group on Legal Frameworks for Public Participation, *Making public participation legal* (Denver: National Civic League, 2013). Available at: http://ncdd.org/rc/wp-content/uploads/MakingP2Legal.pdf (accessed on 2019.10.15).

communities feel about the environment where they live is fundamental for decision- and lawmakers. Moreover, it is also important to public officials, companies, judges, arbitrators, mediators, and everyone involved in any legal disputes. The provision of public participation[1088] demonstrates to be crucial for those who intend to influence decision- and law-making processes, such as project opponents or supporters, lobbyists, landowners, environmental NGOs, facility operators, investors, and planners. This kind of participation is an essential solution to increase the effectiveness of taking into account citizens' contributions. It facilitates the consideration of contrasting legal arguments, in order to reach fairer solutions and commitments both in decisions and legislation. Therefore, it certainly enhances legitimacy and will possibly reduce social conflicts within communities and with governments and corporations.[1089]

As Arnold clearly argues, an adaptive legal framework for resilience justice (and thus for an effective protection of environmental rights) will not only make use of studies and evidence about the conditions, adaptive capacity, and inequality and vulnerabilities within communities, but also methods of community-based participation for governance, policy, and legislation. The point is to enhance the capacity of human communities to adapt to shocks and changes while retaining their identity, idiosyncratic characteristics, core structures, and functions.

In effect, this framework must encompass the already mentioned elements of resistance and strengthening, bounce-back, adaptation, and transformation, in a way to ensure equitable access to and distribution of environmental, social, and institutional conditions on which citizens and their communities depend to thrive, adapt, and evolve. This means that granting people the opportunity to

[1088] See generally and more recently in Portuguese, André Constant Dickstein, *Participação Pública na Tomada de Decisão Ambiental* (Lisboa: AAFDL, 2019).

[1089] Alexandra Aragão, "Direito fundamental de participação cidadã em matéria ambiental: o papel dos serviços dos ecossistemas" (2019), 55-66.

participate meaningfully and effectively in all processes concerning their community conditions will certainly improve the content of decisions and legislation that are to be implemented in those territories.[1090]

2.2. Institutions

Not only mere participation of citizens, but also the inputs of institutions are important for an adaptive framework, which can improve the protection of environmental rights and the implementation or enhancement of resilience justice. It is essential that public institutions, associations, and communities take part of the legal and governance dialogue, but also the participation of private institutions is crucial.[1091]

Ostrom demonstrated that small groups can very often act collectively to manage resources without external coercive authority.[1092] Moreover, it is broadly recognised that:

> "[l]ocally evolved institutional arrangements governed by stable communities and buffered from outside forces have sustained resources successfully for centuries."[1093]

This means that all interested stakeholders must be part of the process of governing and legislating. It does not mean that institutions and communities replace the constitutional and legal powers and bodies which were historically

[1090] See Arnold, "Adaptive law" (2018), 186.

[1091] Michael P. Vandenbergh, "Private Environmental Governance," *Cornell Law Review*, Vol. 99, No. 1, (November 2013), 129-200.

[1092] Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press: 1990), 88-102.

[1093] Dietz et al, "The Struggle to Govern the Commons" (2003), 1907. See also Oran R. Young, "Building Regimes for Socialecological Systems: Institutional Diagnostics," in Oran R. Young, Leslie A. King, and Heike Schroeder, *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (Cambridge, MA: MIT, 2008), 123.

supposed to govern and legislate. However, involvement and participation of all those who are specialised and closer to the reality (living and working in the field) is essential for achieving better policy and legislation.

This is the reason why Holley claims for partnerships in new environmental governance and regulation.[1094] It is an approach that must involve collaboration between a diversity of stakeholders (whether they are private, public, non-governmental, or civil society). Different agents must act together towards commonly agreed and mutually negotiated objectives. This is a framework strongly that focuses on:

> "participatory dialogue and deliberation, flexibility (rather than uniformity), inclusiveness, knowledge generation and processes of learning, transparency and institutionalised consensus-building practices."[1095]

Therefore, a new framework must come out of the old and outdated Hobbes' *Leviathan* perspective of centralised governments and legislatures (and even courts).[1096] It involves a variety of non-state actors assuming administrative, regulatory, managerial, and mediating responsibilities, which have been previously undertaken monopolistically by the state.[1097]

2.3. Monitoring

[1094] Cameron Holley, "Environmental regulation and governance," in Peter Drahos (ed.), *Regulatory Theory: Foundations and Applications* (Acton: ANU Press, 2017), 741-758, 744.

[1095] Holley, "Environmental regulation and governance" (2017), 747. Also see David M. Trubek and Louise G. Trubek, "New governance & legal regulation," *Columbia Journal of European Law*, Vol. 13 (2007), 540-564; and, generally, Gráinne de Búrca and Joanne Scott (eds.), *Law and New Governance in the EU and the US* (Oxford: Hart Publishing, 2006).

[1096] See Thomas Hobbes, *Leviathan* [1651], Crawford Brough Macpherson (ed.) (London: Penguin, 1985).

[1097] Elinor Ostrom, "Beyond markets and states: Polycentric governance of complex economic systems," *American Economic Review*, Vol. 100 (2010), 641-72, 643.

In the era of big data, and to improve the management and governance, information is valuable. ICT solutions improve efficiency in the organisation of territories, the implementation of measures to enhance an efficient and sustainable use of natural resources or the enhancement of social-ecological resilience justice.[1098] The use of new technologies eases the enactment of decisions, policies, and laws. With resource to electronic platforms, it is possible to simplify decision- and law-making, as well as participation and consultation of the public.[1099]

At the same time, the recent reality of "sensorisation" (or multiplication of sensing) within communities and in the territory is a way of easing decision- and law-making to rapidly update to the current reality of complex social and ecological systems, responding to their actions, movements and changes.[1100]

Other monitorisation that must be performed is to the application of the law. One interesting example of this was the Portuguese industrial licensing and authorisation legal framework (Responsible Industry System or *SIR* in Portuguese), enacted by Decree-Law no. 169/2012 of 1 August, which provided in Article 6 of its enactment legal instrument that the act should be revised within

[1098] From a sustainable development perspective, see Alexandra Aragão, "Da mera proclamação da sustentabilidade ao dever legal de monitorização do desenvolvimento sustentável através de matrizes de indicadores", in Sara Moreno Pires, Alexandra Aragão, Teresa Fidelis, Ireneu Mendes (coords.), *Indicadores de Desenvolvimento Sustentável: Instrumentos estratégicos e inovadores para municípios sustentáveis. O caso de Estarreja* (Coimbra: Instituto Jurídico, 2017), 79-109.

[1099] Melo Cartaxo and Hossain, "Digitalization and Smartening Public Governance of the European High North Regions" (2018), 65-80.

[1100] Sergio Trilles et al, "Deployment of an open sensorized platform in a smart city context," *Future Generation Computer Systems*, Vol. 76 (2017), 221-233; Artur Quintas, Jorge Martins, Marcos Magalhães, Fábio Silva, and Cesar Analide, "Intelligible Data Metrics for Ambient Sensorization and Gamification," in Paulo Novais, David Camacho, Cesar Analide, Amal El Fallah Seghrouchni, and Costin Badica (eds.), *Intelligent Distributed Computing IX: Studies in Computational Intelligence*, Vol. 616 (Cham: Springer, 2016), 333-342; Fábio Silva and Cesar Analide, "Sensorization to Promote the Well-Being of People and the Betterment of Health Organizations," in José Machado and António Abelha (eds.), *Applying Business Intelligence to Clinical and Healthcare Organizations* (Hershey, PA: IGI Global, 2016), 116-135.

the following 2 years (no. 1) and the responsible public entities should elaborate yearly reports regarding all statistic elements of process iterations (no. 2).[1101] The act was only revised three years later by Decree-Law no. 73/2015, of 11 May, which still is the version currently in force and has not been revised again.

Even not having had received later continuity, this was an example of adaptive law-making and application by public authorities (and the government), based on the referred element of monitoring, which demonstrated major importance in the statement of reasons of that act.[1102]

In the reality of urban environments, the element of monitorisation assumes special relevance, namely in this era of increasing smart cities and/or data-driven city governance, where decisions and legislation are more and more influenced by a growing sensitive and predictive way of decision-, policy- and law-making.

Finch and Tene named it the "metropticon", where everything is hyperconnected, for better and for worse, especially with regard to privacy issues.[1103] Nevertheless, in terms of environmental and land use, monitoring through different kinds of sensors, such as those collecting data on air pollution or even smartphones which collect data and metadata on people's actions (when complying with privacy rules), can make a large difference in future governance and legislation in urban spaces. Simple examples of these could be regulation on the control of access to certain urban areas or on authorising a number of

[1101] The initial version of the decree-law may be consulted on the Portuguese Republic Official Journal <https://dre.pt/application/conteudo/179275> (accessed on 2020.01.06).

[1102] The revised version of the decree-law may be consulted on the Portuguese Republic Official Journal <https://dre.pt/application/conteudo/67185041> (accessed on 2020.01.06).

[1103] Kelsey Finch and Omer Tene, "Welcome to the Metropticon: Protecting Privacy in a Hyperconnected Town," *Fordham Urban Law Journal*, Vol. 41, No. 5 (2015), 1581-1615.

activities depending on real-time data analytics and subsequent information about pollution or security levels.[1104]

2.4. Soft law

In a continuously changing world, which has been strongly influenced by the globalisation of economics, climate change, and the spread of increasing numbers of data and information, more flexible legal instruments have been appearing with the aim of providing "adaptability", "elasticity", and "problem-solving capacity" to a multiplicity of actors who enact, interpret, and make use of legal norms. [1105]

The legal formula, which became known as "soft law", is usually understood by the legal authors as representing regulatory instruments and mechanisms of governance that, while implicating some kind of normative commitment, do not actually rely on the same binding rules or on a regime of formal sanctions.[1106] However, they are easier to modify and adapt, in accordance with continuous changes in communities and society, environment and territories, or technologies.

[1104] On this issue, see Mohamad Amin Hasbini and Martin Tom-Petersen, "The Smart Cities Internet of Access Control, opportunities and cybersecurity challenges," Securing Smart Cities (Sept 25, 2017) <https://securingsmartcities.org/wp-content/uploads/2017/09/SSC-IAC.pdf> (accessed on 2020.01.06).

[1105] Jean Carbonnier, *Flexible Droit: pour une sociologie du droit sans rigueur*, 10th ed. (Paris: LGDJ, 2001), 25.

[1106] Francis Snyder, "The Effectiveness of European Community Law: Institutions, Processes, Tools and Techniques," in *Modern Law Review*, Vol. 56 (1993), 19-56; Wellens and Borchardt, "Soft Law in European Community Law" (1989), 267-321.

When legal interpreters deal with soft law, they must compare and articulate an assortment of dichotomies, such as orders and advice, norms and principles, sanctions and justiciability, rules and principles, sources of law or not.[1107]

As a matter of fact, there are countless instruments which are applied today by public and private organizations and entities. Among these, areas of law exist which, apart from not providing sanctions for its non-compliance, have a diminished instancy. At this point, a large number of instruments could be identified, such as codes of conduct, codes of good-practices, codes of ethics, recommendations, or guidelines. These are, therefore, among the most known instruments of soft law, generally considered as non-sanctioned law.

Regarding this issue, Shelton identifies diverse examples of soft law, and at different levels, such as human rights, environmental law, or trade and finance. In the areas of environment and from an international perspective, the author argues that soft law is usually subsequent to treaties or statutory law, and is used as a way to flesh out less clearly defined principles in the hard law's text. Furthermore, regionalisation in environmental soft law is usually a result of geographic realities.[1108]

Additionally, with regard to the definition of this aggregate of instruments, Aguiló Regla explains that:

> "A law is *soft*[1109] when its guides of conduct are not imposing, so they are not coercively supported. It is a law which relies more on negotiation, dialogue, facilitation, acceptance and persuasion, than on enforcement."[1110]

[1107] See Riccardo Guastini, *Lezioni di teoria del diritto e dello Stato* (Torino: Giappichelli, 2006), 56.

[1108] Dinah L. Shelton, "Soft Law," in David Armstrong (ed.), *Routledge Handbook of International Law* (Abingdon and New York: Routledge, 2009), 68-80.

[1109] Author's emphasis.

[1110] Josep Aguiló Regla, "Fuentes del derecho," in Jorge Luis Fabra Zamora and Verónica Rodríguez Blanco (eds.), *Enciclopedia de Filosofía y Teoría del Derecho, Volumen Dos* (Mexico, D.F.: UNAM, 2015), 1019-1066, 1064.

Even if no (or a lighter) power of enforcement exists, different grades of lawfulness and binding force are present, not only in the distinction between hard and soft law, but also amongst soft law instruments (with different grades of acceptance, precision, relevance, and binding force).[1111]

And these elements in which soft law relies are precisely what the effective protection of environmental rights and the implementation and enhancement of resilience justice urge in the reality of cities. They can be the result of negotiation, participation, consultation, planning, and monitoring, and more easily contribute to social-ecological resilient urban environments, where large numbers of populations live, and a myriad of environmental and climate problems can be found.

Again, for those legal scholars who could more sceptic about the use of soft law, this is only one of the possible elements and cannot be used alone, but in articulation with hard law and the other elements hereby suggested.

2.5. Adaptive adjudication?

In the last decades, the "adaptive" conceptual label for agency resource management plans has become omnipresent, first in the US and today all over the world. According to Ruhl and Fischman, since 1993, each of the major federal resource management agencies within the US has made a policy commitment to employ adaptive terminologies. From the idea of "balanced" approaches, environmental, panning and resource agencies decided to turn to "adaptive" approaches.

[1111] Also see R.R. Baxter, "International Law in 'Her Infinitive Variety'," *International and Comparative Law Quarterly* 29 (1980), 549-566.

Courts are, therefore, called upon to evaluate how well the "adaptive" alternatives selected by agencies responsible for managing territories meet legal requirements. This is why an increasing number of decisions employ the ideas and terms related with "adaptive management." Most cases using or even discussing this issue tend to focus on questions that are secondary to this analysis. In US, for example, an increasing majority of new federal resource management decisions use an adaptive management framework. Therefore, a steady stream of challenges to federal resource management decisions need to discuss the framework to set the stage for evaluating the unrelated legal challenges.[1112]

According to Ruhl and Fischman, it is fair to conclude that US courts have long-lasting roots in the conventional administrative law model of a phase change at the time of final agency action. However, they have been increasingly giving agencies wide berth within statutory constraints to alter traditional planning approaches to accommodate adaptive management.[1113]

Other way of analysing adjudication from an adaptive perspective is through the promotion of more environmental mediation. This extrajudicial solution offers public bodies, citizens and private companies operating in certain fields solutions that are complementary to judicial or civil protest. The mentioned solutions ensure that all the parties feel co-responsible and part of decisions taken, given that decisions are a result from dialogue. Mediation outcomes more easily reflect all stakeholders' aspirations, interests and needs. In contexts of austerity and crisis, where public money is scarce, or even in cases where financial contention is needed, it is clear that early consensus building can save time, financial and human resources. In addition, it can contribute to solutions where environment is better protected, spatial planning can be more sustainable, and communities

[1112] Ruhl and Fischman, "Adaptive Management in the Courts" (2010), 424-484.

[1113] Ruhl and Fischman, "Adaptive Management in the Courts" (2010), 447.

may find more wellbeing, with a potentially smoother implementation of the decisions taken.[1114]

3. Conclusive synthesis

This chapter intended to suggest several characteristics for a more adaptive framework within the umbrella principles and rules of public law, combining the goals of the protection of environmental rights, the implementation or enhancement of resilience justice, and community action.

A new adaptive legal framework must, therefore, be based on elements of promoting public participation and consultation and decision- and law-making, encouraging the inclusion of different public entities and a multiplicity of stakeholders in the processes, providing monitoring components in the enactment and application of decisions and legislation, and also making judicial and extrajudicial decisions more flexible, adaptive, and learning-grounded.

This does not mean that all other conventional and less "flexible" legal tools should be repudiated by environmental lawyers and interpreters. On the contrary, the hereby suggested tools are a supplement for a better and more effective protection and application of environmental law, in a way to improve resilience of social-ecological systems, and especially within complex, unstable, uncertain, and unequal communities and territories such as urban environments.

[1114] Úrsula Caser et al, "Environmental Mediation: An Instrument for Collaborative Decision Making in Territorial Planning," *Finisterra*, Vol. LII, No. 104 (2017), 109-120 <https://revistas.rcaap.pt/finisterra/article/view/6969/9114> (accessed on 2020.01.06). See also Cátia Sofia Marques Cebola et al, "Desafios à mediação ambiental em Portugal: os princípios da Lei nº 29/2013," in Isabel Celeste Monteiro Fonseca (coord.), *A mediação administrativa: contributos sobre as (im)possibilidades* (2019), 95-123; Brendler Colombo and Silvana Raquel, "O princípio da confidencialidade na mediação de conflitos ambientais," *Revista Catalana de Dret Ambiental*, Vol. 10, No. 1 (2019), 1-37 <https://www.raco.cat/index.php/rcda/article/view/359763/451786> (accessed on 2020.01.06).

The adaptive environmental legal framework, based on the components described in this study, intends to support the already usual and conventional tools. Conventional environmental law is often grounded in those apparently more "crystallising" hard law instruments, which have been, as a matter of fact, strongly contributing for the evolution of protection of the environment. Nevertheless, the tools and mechanisms introduced and suggested in this chapter (and also in the previous ones) are additional elements to make this protection more effective, participated, closer to the reality, and capable of accompanying the evolution of communities and territories (which are always changing) with more precision and agility.

Chapter VIII – Conclusions and future perspectives

1. Introduction

This dissertation intended to find theoretical and practical solutions for current problems which communities living in cities are living today. From the protection of environmental rights (and the so-called right to the city) to the mitigation and adaptation to the phenomena of climate change in constantly growing urban spaces, social-ecological resilience demonstrates to be an increasing issue.

Law and governance play important roles in defining the pathways that communities and territories must follow with regard to the mentioned social-ecological problems. And this is the reason that oriented the elaboration of this dissertation.

2. Main features of this research

The work that was developed in this research was based on existing literature, legislation, policies, and case law. These elements gave important contributions not only for the posing of questions but especially for finding the answers.

Analysing US and EU legislation, policy and case law, legal and multidisciplinary literature worldwide, but also national and local experiences, this research was built to be only a contribution for law and governance to become more adaptive. The principle of this research is that law and governance can be supported in the traditional and conventional, but must open horizons for new legal and governance tools, based on the participation of the public and different stakeholders, continuous learning and planning, as well as on more adaptive and flexible forms of soft law.

2.1. Closing summary of the dissertation

Along this dissertation the reality and the problems of a massive urban sprawl were introduced. Cities are growing at unprecedent levels. Cities are complex and thus vulnerable. Uncertainty, instability, and inequality are visible results of this complexity.

Environmental rights seem to be a solution for these problems. Actually, constitutions and national legislations have tried to make use of them in order to demonstrate that their regimes are aligned with the international community and also with the general perspectives of sustainable development. Nevertheless, the provision of these rights shows to be insufficient to solve the environmental (and consequent) problems caused by the effects of the mentioned complexity of urban environments. And how this dissertation intended to explain, realities such as that of climate change urges new perspectives which tend to embrace the theories of social-ecological resilience and abandon the traditional sustainability narrative.

The concept of resilience justice (or just resilience) emerges in this dissertation as an objective of improving the lives of people living in cities, giving them the possibility of participating in decision- and law-making, and ensuring them equal opportunities in the access to the protection of environmental rights and environmental justice.

This dissertation also intended to analyse adaptive law and adaptive legal mechanisms or instruments as new paradigmatic solutions (even if not the only ones) and a way forward in the enactment, implementation, and application of environmental law and the mentioned (more "traditional" or conventional) environmental rights.

In effect, the components of an adaptive environmental law demonstrate to contribute to a more flexible but simultaneously effective application of general environmental principles and rules. Additionally, these features must be

understood not as the only solution but as complementary or a *plus* to the traditional or conventional legal mechanisms.

As it was demonstrated earlier in this dissertation, environmental law is still rather recent, and it intends to regulate realities that are always changing and on the move. Thus, it will always essential to find new solutions, tools, and techniques, based on learning with what happens within the different and complex systems that it intends to regulate. Being conscientious that the enactment and application of decisions and legislation need to be monitored and constantly analysed is just one of the first steps for a more adaptive environmental law, but also more effective and concerned with the resilience of social-ecological systems.

2.2. Questions intended to be answered

In the beginning of this dissertation, two main questions were introduced. Throughout the study hereby presented, was possible to answer to them. It is, at this point, achievable to answer these questions briefly.

a) *To what extent are environmental rights sufficient legal instruments to effectively implement or achieve a status of social-ecological resilience justice?*

As previously demonstrated environmental rights play an important role to frame environmental law, regulation, and decision-making. They can be enshrined by constitutions (written or not), in other state-created non-constitutional legislation, or even locally, through urban law, administrative decisions or policies. They can also assume various characteristics and classifications, which may guide their interpretation to different results and conclusions.

However, as discussed in this dissertation environmental rights show to be insufficient with regard to their effective and equal protection. This is particularly clear in the case of urban environments, where for their dimension, complexity, uncertainty, instability, and inequality, other solutions and tools need to be added to the simple legal provision of those rights. The *cry* for a right to the city was an express example of this need. And this is the reason why a growing number of authors is suggesting the need for the implementation or enhancement of resilience justice or a just resilience, as a game changer in law and governance within urban environments.

b) *To what extent could adaptive law play a role as a new legal tool to address or remedy that possible insufficiency of environmental rights to achieve resilience justice (within the reality of urban environments)?*

As it was explained before, resilience justice (or just resilience, as another variable of it) corresponds to the application of the principle of equality in the protection of environmental (and climate) rights. It borrows characteristics from environmental and climate justice, and ensures to low-income, elder, and marginalised communities more equal opportunities in the access to justice. Resilience justice can be achieved or enhanced through combinations of resilience-oriented and community action policies and governance. However, law may have an important position in all this process if it includes in its frameworks and processes the goals of resilience justice. It will thus need to be more flexible or adaptive in respect to the protection of the resilience of the complex social and ecological systems that are present in the territory of its jurisdiction.

In fact, it is possible to find different manifestations of adaptive law and governance in a number of legislations, in both sides of the Atlantic (in state/national or federal/supranational law). Some examples of public

participation or consultation can be found in conventions, national or local legislation and decisions. These are only initial or early manifestations which demonstrate the intentions of legislatures to proceed with this trend. However, more provisions are needed, and it is essential for law to enshrine not only the participation of the public but also the e other features of adaptive law, such as monitoring and constant learning, multi-stakeholder action, or the adoption of more soft law. The road to more data-driven (or smarter) cities must also be mentioned, given that law may learn immensely with what the *sensoring* (or *sensorising*) of changes in human/social behaviours and environment phenomena can reveal, very often in real time.[1115]

With respect to this issue, and specifically to need of law to be adaptive, this research intends to demonstrate that, in the words of Cardozo:

> "Existing rules and principles can give us our present location, our bearings, our latitude and longitude. The inn that shelters us for the night is not the journey's end. The law, like the traveler, must be ready for the morrow. It must have a principle of growth."[1116]

Therefore, due to the insufficiency of environmental rights to effectively and equally and protect all those who live in the complexity of cities, resilience justice must be implemented or enhanced. Adaptive legal mechanisms appear to be the most appropriate tools to support this legal and governance process of giving social-ecological systems the capacity to adapt to uncertainty and instability, evolving in a smooth way and maintaining their basic characteristics. This adaptive framework opens the way to the acceptance of the resilience narrative in legal thinking.

[1115] Trilles et al, "Deployment of an open sensorized platform in a smart city context" (2017), 221-233.

[1116] Benjamin N. Cardozo, *The Growth of the Law* (New Haven, CT: Yale University Press, 1924), 20. Cardozo was an Associate Justice of the Supreme Court of the United States from 1932 to 1938.

3. Implications of this research

A doctoral research and its subsequent conclusions, which are identified in this final dissertation, have as central aim to contribute to enriching the existing literature in the field of environmental law (in this case applied to urban spaces) and, if possible, to introduce potential practical implications both for future decision- and law-making.

3.1. Possible contribution to existing literature

This research intended to discuss in what extent law can contribute to reduce social-ecological vulnerabilities in cities. Therefore, old and new solutions were identified and examined in a way to improve effectiveness and equal treatment in the protection of environmental rights.

At the same time, the idea of resilience justice (or just resilience) was introduced in this dissertation, grounded in a number of studies of existing literature. This research tries to connect resilience justice with the reality of environmental rights and embrace them along with specific tools of adaptive law and also community action, in a way that had not been developed before.

The research hereby presented intends to generally contribute to existing literature in a sense of looking at urban vulnerabilities as issues that can be solved not only through traditional and conventional administrative decisions and laws but also with new, flexible, evolutive, and adaptive instruments.

Summing up, the major contribution of this work is to apply solutions and tools that could already exist or be present in one or another framework but are not put together in integrated adaptive frameworks for enhancing social-ecological

resilience in cities. And, as explained, existing law and governance realities absolutely need this paradigmatic change to be implemented.

3.2. Practical outputs

The motivation of developing this research was to contribute to an effective practical change. The results of this work intend to be applied in practice and not only merely identified as theoretical aspirations.

In effect, if the problems of complexity, vulnerabilities, uncertainty, instability, or inequality are real, thus practical solutions must be found. And this is why the instruments regarding participation and consultation, institutions and multi-stakeholder involvement, monitoring and continuous learning, or soft law were introduced in here. Because law and governance cannot be only composed of mere aspirations. They must provide clear solutions for the social and environmental problems hereby expressed.

And, following authors such as Arnold[1117] or Ebbesson[1118], environmental law and governance within the territory of the city must adhere to the features of:

a) Flexibility and adaptability;
b) Openness, transparency, and participation (with resource to increasing electronic platforms);
c) Multi-stakeholder involvement (citizens, communities, associations, NGOs, other public entities, investors, or corporations) and multilevel governance (different specialised entities and agencies);

[1117] Arnold and Gunderson, "Adaptive Law" (2014), 317-364; Arnold, "Adaptive Watershed Planning and Climate Change" (2010), 417-487.
[1118] Ebbesson, "The rule of law in governance of complex socio-ecological changes" (2010), 414-422.

d) Monitoring, continuous learning, and analysing feedback loops (also with resource to sensors and the collection of data in real time);
e) Ongoing and iterative changes to decisions, plans, and laws; and
f) Pursuit of effectiveness in decisions and law.

These characteristics of features are only some of the main examples of all that possibilities that may be used by future environmental decision- and law-making in urban environments. Additionally, it should be noted that they are not the only solutions in themselves. They are complementary features to conventional and already existing principles and norms, which demonstrate to contribute to more effective and adaptive environmental law, bearing in mind that, simultaneously, the necessary capacity of legal security and confidence must always be ensured.

However, following the words of Scott, "adaptability and breadth serve as a personal and institutional insurance policy in the face of an uncertain environment."[1119]

4. Opportunities for future research

After this research and its findings, several possibilities of future studies are now opened to be developed. As discussed above, from international to regional, national, or local perspectives, in a constantly changing world, a number of research opportunities might be based on elaborating about possible grades of adaptability of environmental rights, measuring resilience justice in different cities, or even identifying what are the governance challenges of cities regarding disturbance and change.

[1119] James C. Scott, *Two Cheers for Anarchism: Six Easy Pieces on Autonomy, Dignity, and Meaningful Work and Play* (Princeton & Oxford: Princeton University Press, 2012), 65.

In addition to these themes, potential research areas could also be focused on analysing and comparing the protection of environmental rights in different countries around the world, in accordance with their legal traditions, constitutional systems, and even environmental governance frameworks. In this case, studies could specifically be grounded in urban areas, though rural and natural protected places might also be considered.

The conclusions of this research may, therefore, contribute for future comparative studies of concrete cases of cities and their specific law and governance features and different variables might also be developed. Variables may then be selected on the basis of the relevance, quality, and validity of studies of community resilience and vulnerability, including variation, inequality, and identification of key variables. At this point, questions such as the following may be formulated for future studies within the field of this dissertation and as a continuation of the present research:

a) Do communities within a certain city or urban environment have the conditions, characteristics, and/or capacities to adapt to disturbances/shocks and changes?
b) How variable are these conditions, characteristics, and/or capacities across different communities within the urban environment (*i.e.*, how disproportionately less capable of adapting are marginalized communities)?
c) How vulnerable or exposed are the communities within an urban area to disturbances/shocks and changes?
d) How variable are the vulnerabilities or exposures of communities in an urban area to disturbances/shocks and changes (*i.e.* how disproportionately more vulnerable are marginalised communities)?

These actions would represent a number of suggested possibilities for research which could be developed in the future, based on the results and conclusions of this dissertation, with the objective of continuing to contribute to a more effective and equal protection of environmental rights and the implementation or enhancement of resilience justice for social-ecological systems.

For the future, with more extensive research, the variables identified in Table 8 might be analysed, in different cities and in different geographies of the world, as well as their connection with effective environmental law and governance could be assessed.

Table 8: Main features and variables for resilience justice in a city

Main Features	**Suggested variables**
Environment (both natural and built and including both green and blue infrastructure/ecosystems and pollution) – more focused to the conditions or capacities that are related to the rights – that effects how people exercise their environmental rights – compare the relative amount of resilience justice – narrative about resilience justice in each city – five narratives for each measure	Exposure to air pollution – air toxics – toxic hotspots (concentrated pockets of air toxic)
	Access to parks/greenspace (based on principles and standards for access to parks and recreational areas)
	Disparities in tree canopy
	Diversity and inclusive participation in environmental decision making (whether participation is only by elites or broader)
	Access to safe reliable supplies of clean and safe drinking water (answering if there is disruption due to either poor quality or service – are there groups or areas that experience some disruption? – overall access to drinking water
	Exposure/adaptability to disaster (sea level rise, floods, landslides, earthquakes)
	Access to heating by low-income communities
	Access to sewer systems
Economy	Access to jobs by low-income communities
	Access to social entrepreneurship initiatives

	Social and poverty support
Social and capital forces	Access to community gardens and healthy food
	Broad distribution of active community organizations
	Community cooperation, trust, networks, leadership
	Ethnic and cultural diversity
	Walking distance to schools, universities, or jobs
	Gentrification prevention
Politics and governance (including participation, inclusion, and community empowerment)	Electronic participation by low-income communities in disaster planning and response (including adaptation during and after disasters)
	Participation in decision-making by low-income communities
	Flexible/adaptive implementation
	Inter-agency coordination
	Public participation initiatives
	Transparency/open data initiatives
	Citizen engagement and stakeholder collaboration
	Community empowerment initiatives
	Public housing policies

5. Final remarks

In a nutshell, the work that was developed within this research has attempted to find legal and governance solutions that could improve the effective and fair application of environmental law and environmental rights, with special attention to the fast-growing reality of cities (or urban environments).

Following the words of Ebbesson concerning the above-mentioned questions:

> "it is apparent that many of the legal regulations have failed to provide adequate protection for the environment and to create settings that promote sustainable utilisation of common-pool resources (…)."[1120]

Based on the conclusions of this work, possible answers to the challenges acknowledged and introduced by this dissertation could be summarised in the following five features:

a) Urban environments are expanding all over the world, being affected by increasing problems related with complexity of different systems present in the territory, vulnerability, uncertainty, instability, and inequality within populations (and phenomena of climate change are aggravating these issues);
b) International, regional, and constitutional law attempt to protect human communities through the constitutional or simply legal enshrining of environmental rights (not only but with large impact in urban spaces), which face difficulties to be effectively and fairly protected in all places;
c) Sociologists have even tried to suggest a *right to the city*, which is not more than an assemblage of environmental rights or entitlements to city public services, with particular focus on political and ideological purposes;
d) A growing stream of literature has started to discuss the need of focusing on the implementation or enhancement of social-ecological resilience justice or just resilience, which is based on creating a capacity of social and ecological systems to withstand and adapt to disturbances and evolve while maintaining their idiosyncratic characteristics (empowerment of communities and social action play an important role in this process, but legal solutions are essential for an effective change);

[1120] Jonas Ebbesson, "The rule of law in governance of complex socio-ecological changes" (2010), 414-422. In the same sense, see Elinor Ostrom, *Understanding Institutional Diversity* (Princeton, and Oxford: Princeton University Press, 2005).

e) One paradigmatic legal and governance transformation must be driven by the acceptance by legal systems of more flexible and adaptive mechanisms, grounded in the already existing adaptive theories of adaptive planning, management, or governance, but specifically founded in the integrated provision of public participation and consultation in decision- and law-making, multi-stakeholder and multi-agency involvement, monitoring and continuous learning (also with resource to new technologies), ongoing and iterative changes to decisions, plans, and laws, and a concrete focus on pursuit of effectiveness in decisions and law.

At a first glance, environmental legal systems characterised by more flexible or adaptive instruments could appear to be not so effective as desired. However, the experience presented in this dissertation, and in existence (even if not totally integrated) in a large number of legal systems, demonstrates the opposite. In fact, the inclusion of evolving environmental legal mechanisms responds to the needs of resilience of social-ecological systems in a more coherent, inclusive, and participated way, preventing a number of agents who could not comply with environmental norms and principles of doing it when law is more adaptive.

However, environmental adaptive law is only a part of the solution. International, regional, federal, national or state hard-law instruments and the rights enshrined by them must still play an extremely important role, as guiding legal conditions for the subsequent collaborative implementation of a more social-ecological resilient future in current uncertain cities (and in the rest of other territories), from all and for all.

Nevertheless, according to Ostrom,

> "Norms of reciprocity and trust are necessary for the long-term sustenance of self-governing regimes. Norms alone, however, are not sufficient to support individuals facing the temptations of social dilemmas. Rules that are

> fair, effective, and legitimate are necessary complements to shared norms for sustaining self-governing institutions over time. And, in turn, self-organizing arrangements enable people to learn more about one another's needs and the ecology around them. Learning problem-solving skills in a local context generates citizens with more general problem-solving skills that enables them to reach out and more effectively examine far-reaching problems that affect all peoples living on this earth."[1121]

The issues and questions discussed above in this dissertation intended to find answers and solutions for the environmental law that will be applied in the future. Making use of environmental rights that are already provided in a large number of international, regional and national (and also state) instruments, in order to find adaptive and more flexible mechanisms to ensure the existence of more resilient territories and communities.

Not only public authorities, but also members of local communities can thus play an extremely relevant role in all these relations between various levels of law and governance. The application of procedural environmental rights, such as those to information and transparency, enhancing public consultations, participation in decision-making and in the drafting of local and national laws are some examples of what the future of environmental law may resemble.

By empowering, engaging and involving citizens and different entities, and embracing multimodal and multi-stakeholder approaches, closer to local realities and environmental problems, will be possible to better prepare social-ecological urban systems for uncertainty and future disturbances. Following the teachings of Arnold, through all these mechanisms, allied to the already existent

[1121] Ostrom, *Understanding Institutional Diversity* (2005), 287-288.

conventional ones, a "new hope" exists and may certainly thrive in environmental law.[1122]

[1122] Arnold, "Environmental Law, Episode IV: A New Hope?" (2015), 7.

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